Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

Models: 5BW420, 5BW430, 5BW431, 5BW432, 5BW433, 5BW440, 5BW451, 5BW460, 5BW462, 5BW470, 5BW471, 5BW472, 5BW473, 5BW474, 5BW480, 5BW481, 5000LA, 5001LA, 5003LAS, 5002LB, 5004LA, 5006US, 5009SR, 5008SR, 5008US, 5010US, 5009CL, 5012US

PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

See the Notice for copyright and trademark information, and the Preface for symbol conventions and Technician Notes.

Click to download ZIP file of complete MSG to hard drive.

This MSG will be periodically maintained and updated as needed.

To report a technical problem, contact your Regional Support Center or IM Help Center.

For content comments or questions, contact Tech Support

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

PRODUCT DESCRIPTION | TROUBLESHOOTING | ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES | JUMPER AND SWITCH INFORMATION | SPECIFICATIONS

Notice

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Online Maintenance and Service Guide
Compaq Presario 7000 Series Personal Computers

October 2000

Return to Online Maintenance and Service Guide

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

Preface

This *Maintenance and Service Guide* is a troubleshooting guide that can be used for reference when servicing the Compaq Presario Series Personal Computers.

Compaq Computer Corporation reserves the right to make changes to the Compaq Presario 5000 Series Personal Computers without notice.

Symbols

The following words and symbols mark special messages throughout this guide.

WARNING	Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.
CAUTION	Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of data.
IMPORTANT	Text set off in this manner presents clarifying information or specific instructions.
NOTE	Text set off in this manner presents commentary, sidelights, or interesting points of information.

Technician Notes

WARNING	Only authorized technicians trained by Compaq should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, the user should not attempt to make repairs at the component level or to make modifications to any printed circuit board. Improper repairs can create a safety hazard. Any indications of component replacement or printed circuit board modifications may void any warranty.

Locating Additional Information

The following documentation is available to support this product:

- Compaq Presario documentation set
- *Introducing Windows 98 Guide*
- Service Training Guides
- Compaq Service Advisories and Bulletins
- *Compaq QuickFind*
- *Compaq Service Quick Reference Guide*
- *Compaq Help Center*

Return to Online Maintenance and Service Guide

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

Models: 5BW420, 5BW430, 5BW431, 5BW432, 5BW433, 5BW440, 5BW451, 5BW460, 5BW462, 5BW470, 5BW471, 5BW472, 5BW473, 5BW474, 5BW480, 5BW481, 5000LA, 5001LA, 5003LAS, 5002LB, 5004LA, 5006US, 5009SR, 5008SR, 5008US, 5010US, 5009CL, 5012US

PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

PRODUCT DESCRIPTION - INDEX PAGE

Models and Features

CPU Controls and Lights

Side Access Panel

Internet Keyboard Controls

Rear CPU Connectors
Connector pin assignments

Power Cord Set Requirements
General requirements

MODELS AND FEATURES

CPU CONTROLS AND LIGHTS

SIDE ACCESS PANEL

INTERNET KEYBOARD CONTROLS

REAR CPU CONNECTORS

POWER CORD SET REQUIREMENTS

Models and Features

Model	Processor	Hard Drive	CD/ CD-RW/ DVD	Memory	Secondary Drive
5BW420	Cel 766 MHz/66	20.0	48x-tray	64 PC 133up	
5BW430	Cel 800 MHz/370	20.0	8XCD-RW	64 PC 133up	
5BW431	Cop 933 MHz/133	20.0	48x-tray	64 PC 133up	
5BW432	Cel 766 MHz/66	20.0	48x-tray	64 PC 133up	
5BW433	Cel 800 MHz/100	20.0	48x-tray	64 PC 133up	
5BW440	Cel 800 MHz/100	20.0	48x-tray	64 PC 133up	
5BW451	Cop 933 MHz/133	20.0	10x-12x-16x - DVD	64 PC 133up	
5BW460	Cop 1 GHz/133	20.0	48x-tray	64 PC 133up	
5BW462	Cop 1.0 GHz/133	20.0	8xCD-RW	64 PC 133up	
5BW470	Cop 1 GHz/133	40.0	8XCD-RW	128 PC 133up	
5BW470	Cop 1 GHz/133	40.0	10x-12x-16x - DVD	128 PC 133up	
5BW470	Cop 1 GHz/133	40.0	48x-tray	128 PC 133up	
5BW470	Cop 1 GHz/133	20.0	8XCD-RW	64 PC 133up	
5BW470	Cop 1 GHz/133	30.0	8XCD-RW	64 PC 133up	
5BW471	Cop 1.0 GHz/133	20.0	8xCD-RW	64 PC 133up	
5BW472	Cop 1.0 GHz/133	40.0	48x-tray	128 PC 133up	
5BW473	Cop 1.0 GHz/133	40.0	10x-12x-16x - DVD	128 PC 133up	
5BW474	Cop 1.0 GHz/133	30.0	8xCD-RW	128 PC 133up	
5BW480	Cop 1.13 GHz/133	40.0	8XCD-RW	128 PC 133up	
5BW480	Cop 1.13 GHz/133	40.0	10x-12x-16x - DVD	128 PC 133up	
5BW480	Cop 1.13 GHz/133	40.0	10x-12x-16x - DVD	128 PC 133up	CD-RW
5BW481	Cop 1.0 GHz/133	40.0	10x-12x-16x - DVD	128 PC 133up	
5000LA	Celeron 766 MHz	20.0	48x-tray	64 PC 100up	
5001LA	Cop 866 MHz/133	30.0	48x-tray	128 PC 133up	CD-RW
5003LAS	Cop 1.0 GHz/133	40.0	10x-12x-16x-DVD	256 PC 133up	CD-RW
5002LB	Cel 850 MHz/100	30.0	CD-RW	64 PC 133up	
5004LA	Cop 1.0 GHz/133	60.0	48x-tray	192 PC 133up	
5004LB	Cop 1.0 GHz/133	40.0	10x-12x-16x - DVD	128 PC 133up	CD-RW
5006US	Cel 766 MHz/66	20.0	40x-tray	64 PC 100up	
5009SR	Cop 1.0 GHz/133	60.0	10x-12x-16x - DVD	128 PC 100up	CD-RW
5008SR	Cop 933 MHz/133	40.0	48x-tray	128 PC 100up	8xCD-RW
5008US	Cel 800 MHz/100	40.0	40x-tray	128 PC 100up	CD-RW
5010US	Cop 866 MHz/133	40.0	48x-tray	128 PC 100up	CD-RW
5009CL	Cop 1.0 GHz/133	60.0	10x-12x-16x - DVD	128 PC 100up	8xCD-RW
5012US	Cop 1.0 GHz/133	40.0	10x-12x-16x - DVD	128 PC 100up	8xCD-RW

PRODUCT DESCRIPTION
REMOVAL AND REPLACEMENT PROCEDURES
TROUBLESHOOTING
JUMPER AND SWITCH INFORMATION
ILLUSTRATED PARTS CATALOG
SPECIFICATIONS

MODELS AND FEATURES

CPU CONTROLS AND LIGHTS

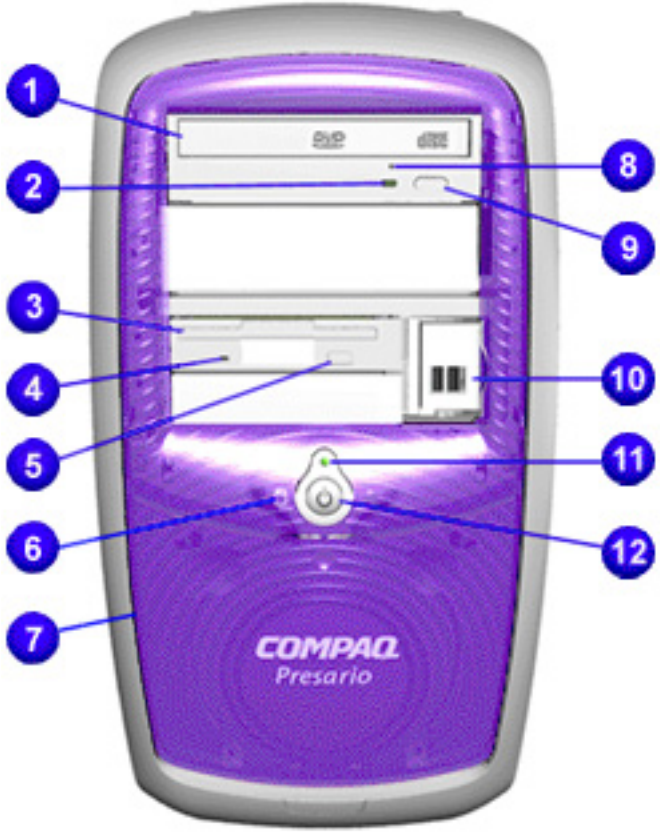
SIDE ACCESS PANEL

INTERNET KEYBOARD CONTROLS

REAR CPU CONNECTORS

POWER CORD SET REQUIREMENTS

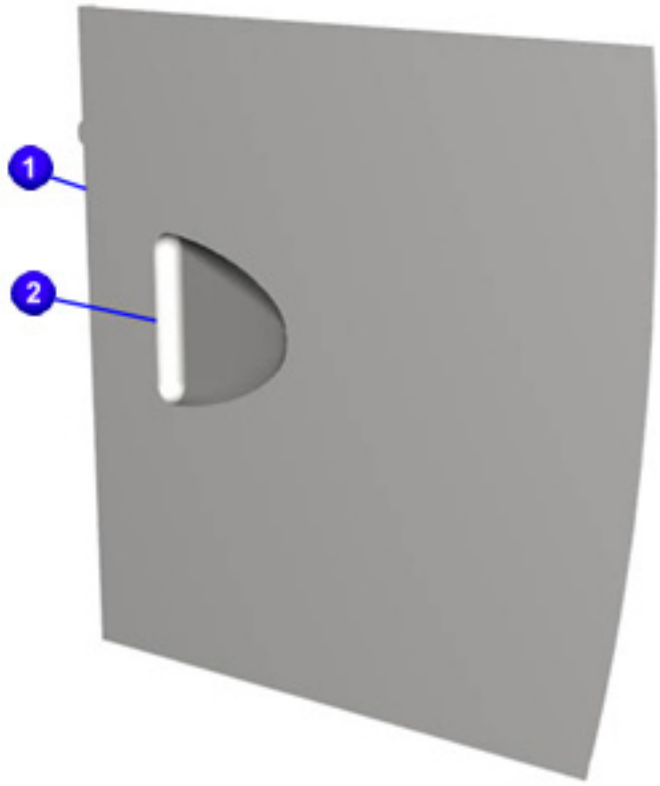
CPU Controls and Lights



1. CD-ROM, CD-RW, or DVD tray (DVD drive available on selected models)
2. CD-ROM, CD-RW, or DVD Activity Light
3. Diskette Drive
4. Diskette Drive Activity Light
5. Diskette Drive Eject Button
6. Hard Drive Activity Light
7. CD Storage Tray
8. CD-ROM Manual Eject Hole
9. CD-ROM Manual Eject Button
10. Front I/O USB Connectors
11. Power Activity Light
12. Power On Button

MODELS AND FEATURES
CPU CONTROLS AND LIGHTS
SIDE ACCESS PANEL
INTERNET KEYBOARD CONTROLS
REAR CPU CONNECTORS
POWER CORD SET REQUIREMENTS

Side Access Panel



1. Side Access Panel
2. Side Access Panel Handle

MODELS AND FEATURES

CPU CONTROLS AND LIGHTS

SIDE ACCESS PANEL

INTERNET KEYBOARD CONTROLS

REAR CPU CONNECTORS

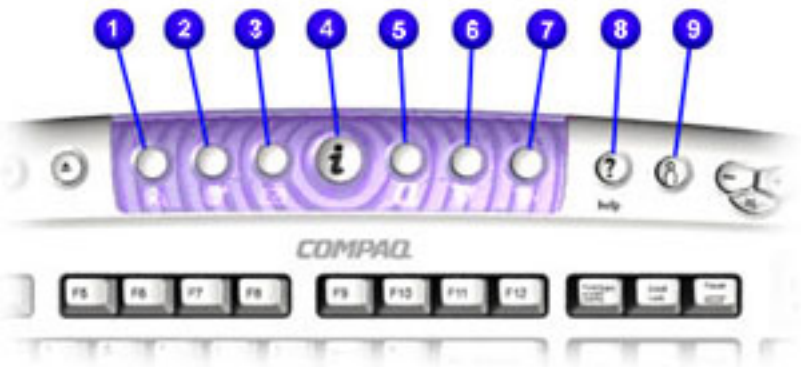
POWER CORD SET REQUIREMENTS

Internet Keyboard Controls

CD/DVD Control Button Suite

1. CD/DVD Play/Pause Button
2. CD/DVD Previous Track Button
3. CD/DVD Next Track Button
4. CD/DVD Stop Button
5. CD/DVD Load/Eject Button
6. Volume Down Button
7. Mute Button
8. Volume Up Button
9. Sleep Button

Internet Zone Butt ons

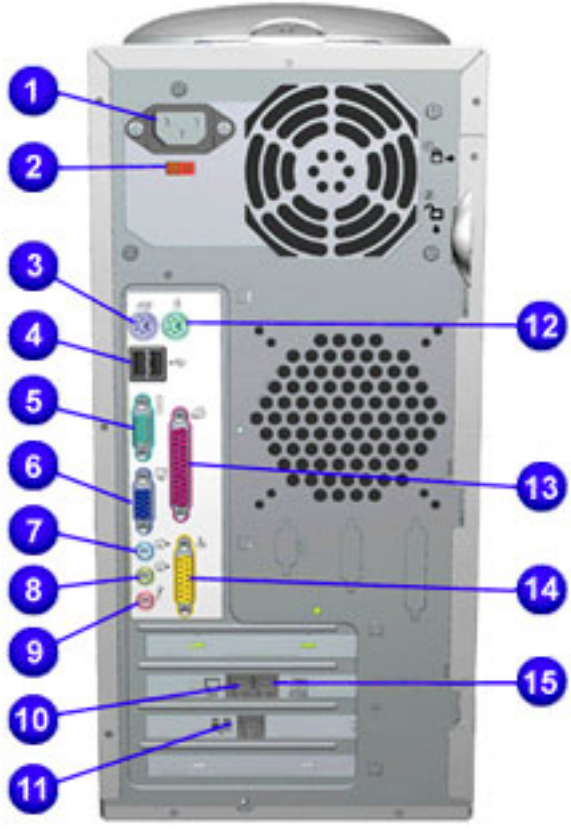


1. Instant Search
2. Activity Community
3. Instant E-mail
4. Instant Internet
5. My Presario
6. Retail/Affinity Central
7. Entertainment Ideas
8. Quick Launch Help Button
9. Quick Launch My Program Button

PRODUCT DESCRIPTION
REMOVAL AND REPLACEMENT PROCEDURES
TROUBLESHOOTING
JUMPER AND SWITCH INFORMATION
ILLUSTRATED PARTS CATALOG
SPECIFICATIONS

MODELS AND FEATURES
CPU CONTROLS AND LIGHTS
SIDE ACCESS PANEL
INTERNET KEYBOARD CONTROLS
REAR CPU CONNECTORS
POWER CORD SET REQUIREMENTS

Rear CPU Connectors



1. AC Power Connector
2. Voltage Select Switch
3. PS2 Port for Connecting a Keyboard
4. Two USB Ports for Connecting a Keyboard or other USB Devices
5. Serial Port
6. Video Port
7. Audio Out (Speakers)
8. Audio In (MP3 Player)
9. Microphone
10. Modem Port
11. Ethernet Port for Connecting to a Network (if equipped)
12. PS2 Port for Connecting a Mouse
13. Parallel Port
14. Game/MIDI Port
15. Phone Connection

IMPORTANT: Connectors may vary depending on the model selected.

MODELS AND FEATURES

CPU CONTROLS AND LIGHTS

SIDE ACCESS PANEL

INTERNET KEYBOARD CONTROLS

REAR CPU CONNECTORS

POWER CORD SET REQUIREMENTS

Power Cord Set Requirements

Requirements

The power cord set (flexible cord and wall plug) received with the computer meets the requirements for use in the country where the computer was purchased.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer. For more information on power cord set requirements, contact your Compaq authorized dealer, reseller, or service provider.

General Requirements

The requirements listed below are applicable to all countries:

Country-Specific Requirements

1. The length of the power cord set must be at least 6.00 feet (1.8 m) and a maximum of 9.75 feet (3.0 m).
2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
3. The power cord set must have a minimum current capacity of 10A and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.
4. The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector, for mating with the appliance inlet on the Switch Box.

Country	Accredited Agency
United States	UL*
US/Canada	UL and CSA

* The flexible cord must be Type SJT-2 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A, 250V) configuration.

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

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PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

TROUBLESHOOTING - INDEX PAGE

Clearing CMOS

Power-On Self Test (POST)

Configuration

Preparing the computer
Setup
Accessing Compaq Utilities Option

Diagnostic Error Codes

Troubleshooting without Diagnostics

Checklist for Minor Problems
Hardware Installation
Power
USB Ports
Disk Drive
Hard Drive
CD-ROM, CD-RW, and DVD Drive
Resolving Hardware Conflicts

CLEARING CMOS

POWER-ON SELF TEST (POST)

CONFIGURATION

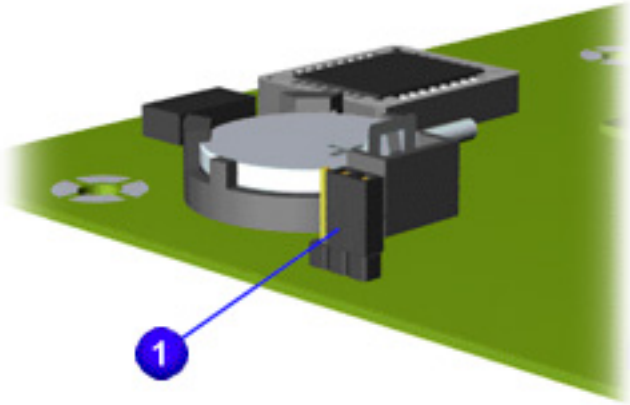
DIAGNOSTIC ERROR CODES

TROUBLESHOOTING WITHOUT DIAGNOSTICS

Clearing CMOS

If the power-on password is unknown, clearing CMOS will disable the password and allow the computer to boot.

The location of the Real-time clock (RTC) battery is shown on the system board illustration below.



1. Complete the preparation for disassembly procedures.
2. Remove the side access panel.
3. To disable the password, move the jumper 1 from pins 1–2 (normal) to pins 2-3 (clear CMOS) for 10 seconds, then return to pins 1-2.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Preparation for Disassembly

To prepare the computer for removal and replacement procedures, complete the following steps:

1. Remove any diskette, compact disc, or tape from the computer.
2. Turn off the computer and any peripheral devices that are connected to the computer.

CAUTION	The computer power switch should be turned off before you disconnect any cables.

CAUTION	Before doing any work inside your computer, ground yourself by touching a metal part of the chassis.

3. Disconnect the power cord from the electrical outlet, and then from the computer.
4. Disconnect all peripheral device cables from the computer.
5. Turn the computer over on its side (open side facing up).

Important	During disassembly, label each cable as you remove it. Be sure to note its position and routing.

Power-On Self Test (POST)

POST is a series of diagnostic tests that run automatically when the system is turned on. After the computer is turned on, ***POST*** checks the following assemblies to ensure that the computer system is properly functioning:

1. Keyboard
2. System board
3. Memory modules
4. Video memory
5. Diskette drives
6. Hard drive
7. Power supply

POST also detects the type of mass storage devices installed in the computer.

If ***POST*** finds an error in the system, an error condition is indicated by an audible and/or visual message. The table below gives explanations of the error codes and a recommended course of action.

NOTE	An external speaker must be installed into the speaker output connector to hear the audible beeps during ***POST***.

Click a link below to find the probable cause and recommended action for a given error message.

Diskette Drive A Error	Keyboard Controller Error	System BIOS Shadowed
Extended RAM failed at offset	Keyboard Error	System Cache Error
Failing Bits nnn	Operating System Not Found	System CMOS Checksum Back
Fixed Disk 0 or 1 Failure	Parity Check 1	System RAM Failed at Offset
Fixed Disk Controller Failure	Parity Check 2	System Timer Error
Incorrect Drive A Type	Real Time Clock Error	UMP Upper Limit Segment
Invalid NVRAM Media Type	System Battery is Dead	Video BIOS Shadowed

POST Messages

Error Message	Probable Cause	Recommended Action
Diskette Drive A Error	Drive A: is present, but fails the BIOS POST diskette tests.	1. Run Setup. 2. Replace the signal cables. 3. Replace the disk drive.
Extended RAM failed at offset	Extended memory not working or not configured properly.	1. Replace the memory modules. 2. Replace the system board.
Failing Bits nnn	nnn is a map of the bits at the RAM address which failed the memory test.	1. Run Setup. 2. Replace the system board.
Fixed Disk 0 or 1	Hard drive is not working or not configured properly.	1. Run Setup. 2. Replace the signal cable. 3. Replace the hard drive.
Fixed Disk Controller Failure	Hard drive is not working or not configured properly.	1. Run Setup. 2. Replace the system board.
Incorrect Drive A Type	Type of diskette in drive A not correctly identified.	1. Run Setup 2. Replace the disk drive.
Invalid NVRAM Media Type	Problem with NVRAM (CMOS) access.	Replace the system board.
Return to top		
Keyboard Controller Error	Keyboard, I/O keyboard controller (on system board), or mouse error.	1. Replace the keyboard. 2. Replace the mouse. 3. Replace the system board.
Keyboard Error	Keyboard, I/O keyboard controller (on system board), or mouse error.	1. Replace the keyboard. 2. Replace the mouse. 3. Replace the system board.
Operating System not found	Operating system cannot be located on either drive A or C.	Run Setup.
Parity Check 1	Parity error found in the system bus.	1. Run Setup. 2. Replace the memory modules. 3. Replace the system board.
Parity Check 2	Parity error found in the I/O bus.	1. Run Setup. 2. Replace the ISA board (modem).
Real Time Clock Error	Real-time clock fails BIOS test.	Replace the system board.
System Battery is Dead	RTC battery is dead.	1. Replace the RTC battery. 2. Run Setup.
Return to top		
System BIOS Shadowed	System BIOS copied to Shadow RAM.	Status Message: no action required.
System Cache Error	RAM cache failed the BIOS test.	Run Setup.
System CMOS Checksum Bad	CMOS is corrupted or modified incorrectly.	Run Setup.
System RAM failed at Offset, nnn	System RAM failed.	Replace the memory modules.
System Timer Error	DMA, timers, etc.	Replace the system board.
UMB Upper Limit Segment Address, nnn	Displays the address of nnn of the upper limit of Upper Memory Blocks, indicating releases segments of the BIOS.	Status Message: no action required.
Video BIOS Shadowed	Video BIOS successfully copied to shadow RAM.	Status Message: no action required.
Return to top		

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

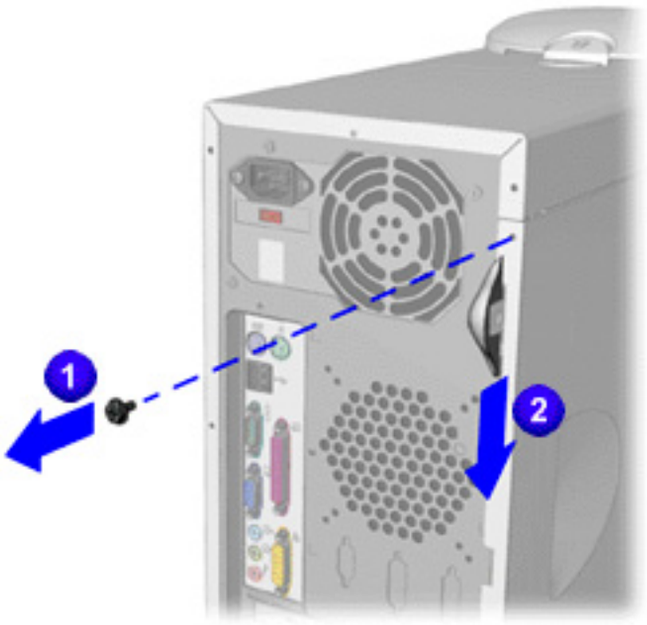
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Side Access Panel



Removal

1. Perform the preparation procedures.
2. Remove the screws from the access panel.
3. Locate the latch below the screw, press down, and then hold in the down position.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Side Access Panel, Continued

Removal

4. Grab the handle and slide the side access panel from the chassis.

Replacement

Align the tabs on the side access panel with the chassis slots and slide the side panel into place.

CLEARING CMOS

POWER-ON SELF TEST (POST)

CONFIGURATION

DIAGNOSTIC ERROR CODES

TROUBLESHOOTING WITHOUT DIAGNOSTICS

Configuration

This section explains how to use Setup and Compaq Utilities which should be accessed in the following ways:

1. When a system configuration error is detected during the POST.
2. To change factory default settings for some of the computer features.
3. To change the system configuration, which is sometimes necessary when you add or remove optional hardware.
4. To set system configuration features.

Click a link below to go to the appropriate subsection:

Preparing the Computer

Setup

Accessing Compaq Utilities Options

View System Information (INSPECT)

Preparing the Computer

If you encounter an error condition, complete the following steps before starting problem isolation procedures:

1. Ensure proper ventilation. The computer should have a 3-inch (7.6cm) clearance of the system unit.
2. Turn off the computer and peripheral devices.
3. Disconnect any peripheral devices other than the monitor and keyboard. Do not disconnect the monitor and keyboard if you want to test or use it to log error messages.
4. Install loop-back and terminating plugs for complete testing.

Setup

The Setup utility gives a snapshot of the computer's hardware configuration, aids in troubleshooting, and sets custom features. Setup recognizes a new internal component or an external device and automatically updates the configuration screens. Use the Setup utility to:

1. Modify settings for audio, storage, power management, communications, and input devices.
2. Get an overall picture of the computer's hardware configuration.
3. Verify configuration parameters in determining problems.
4. Set time and date.

Running Setup

To access the Setup utility, turn on the computer and press the **F10** key when the Compaq logo appears on your screen.

NOTE	The actual menu displayed on your computer may vary slightly, depending on your configuration.

Return to top

Accessing Compaq Utilities Options

This section provides information about the menu options accessible from the **Compaq Utilities** menu.

Create a Compaq Utilities Disk

A Compaq Utilities disk must be created to troubleshoot the system. To create the disk, complete the following steps:

1. Insert the *QuickStore CD* into the CD drive.
2. From the Windows desktop, click on **Start**, then **Programs**, then **Windows Explorer**.
3. Click on the CD drive icon.
4. Double-click on the **PCdiags** folder.
5. Insert a disk in the disk drive.
6. Double-click on the **QRST5.exe** icon.
7. Press **Enter** when the QuickStore label appears.
8. After the CD has completed copying to the disk, eject the *QuickStore CD*.

Running Compaq Utilities

To run Compaq Utilities, turn on or reboot the computer with the Compaq Utilities disk in the disk drive. The menu will appear on your screen.

View System Information (INSPECT)

The View System Information (INSPECT) utility provides information about the system once it is configured. INSPECT operates with MS-DOS and provides information about the operating system, including:

1. Contents of the operating system startup files
2. Current memory configuration
3. ROM version
4. Type of processor and coprocessor
5. Diskette and hard drives
6. Active printer and communication interfaces
7. Modem

Return to top

Diagnostic Error Codes

Diagnostic error codes occur if the system recognizes a problem while running the program. These error codes help identify possibly defective subassemblies.

Tables listed on this page give possible error code and descriptions of the required action to resolve the error condition.

IMPORTANT	Retest the sytem after completing each step. If the problem is resolved, do not proceed with the remaining diagnostic tests.

For assistance in the removal and replacement of a particular subassembly, see *Removal and Replacement Procedures*.

100-xx	Processor	**600-xx**	Disk drive	**3200-xx**	Audio
200-xx	Memory	**1100-xx**	Serial	**3300-xx**	CD or DVD
300-xx	Keyboard	**1200-xx**	Modem	**xxxx-xx**	CD-RW DVD
400-xx	Parallel (printer)	**1700-xx**	Hard drive	**8600-xx**	Pointing device interface
500-xx	Monitor	**2400-xx**	Video		

Processor Error Codes

Error Code:	Description:	Recommended Action:
101-xx	CPU test failed	Replace the system board and retest.
102-xx	Processor error	1. Run Setup and retest. 2. Replace the processor and retest.
103-xx	DMA controller failed	The following step applies to error code 103-xx through 106-xx: Replace the system board.
104-xx	Interrupt controller failed	
105-xx	Port error	
106-xx	Keyboardcontroller self-test failed.	
107-xx	CMOS RAM test failed	The following steps apply to error code: 107-xx through 109-xx: 1. Replace the battery/clock module and retest. 2. Replace the system board and retest.
108-xx	CMOS interrupt test failed	
109-xx	CMOS clock failed	
110-xx	Reprogrammable timer test failed	The following steps apply to error codes 110-xx through 113-xx: Replace the system board and retest.
111-xx	Refresh detect test failed	
112-xx	Speed test failed	
113-01	Protected mode test failed	
114-xx	Speaker test failed	1. Verify the speaker connection. 2. Replace the system board and retest.

199-xx	Installed devices test failed	1. Check system configuration. 2. Verify cable connections. 3. Check switch settings. 4. Run Compaq Utilities. 5. Replace the system board and retest.

Return to top

Memory Error Codes

Error Code:	Description:	Recommended Action:
200-xx	Invalid memory configuration	1. Verify memory module value compatibility. 2. Reinsert memory in the correct location.
201-xx	Memory machine ID test failed	The following steps apply to error codes 201-xx and 202-xx: 1. Flash the ROM and retest. 2. Replace the memory and retest. 3. Replace the system board and retest.
202-xx	Memory system ROM checksum failed	
203-xx	Memory write/read test failed	The following steps apply to error codes 203-xx through 210-xx: 1. Remove one memory module at a time until the error message stops. 2. Replace other removed modules one at a time, testing each to ensure the error does not return. 3. Replace the system board and retest.
204-xx	Memory address test failed	
206-xx	Increment pattern test failed	
210-xx	Random pattern test failed	

Return to top

Keyboard Error Codes

Error Code:	Description:	Recommended Action:
301-xx	Keyboard short test, 8042 self-test failed	The following steps apply to error codes 301-xx through 304-xx: 1. Check the keyboard connection. If disconnected, turn the computer off and connect the keyboard. 2. Replace the keyboard and restart. 3. Replace the system board and retest.
302-xx	Keyboard long-test failed	
303-xx	Keyboard LED test, 8042 self-test failed	
304-xx	Keyboard typematic test failed	

Return to top

Monitor (VGA or Flat-Panel) Error Codes

Error Code:	Description:	Recommended Action:
501-xx	Video controller test failed	The following step applies to error codes 501-xx through 516-xx: Replace the system board and retest.
502-xx	Video memory test failed	
503-xx	Video attribute test failed	
504-xx	Video character set test failed	
505-xx	Video 80 x 25 mode 9 x 14 character cell test failed	
506-xx	Video 80 x 25 mode 9 x 14 character cell test failed	

507-xx	Video 40 x 25 mode test failed	
508-xx	Video 320 x 200 mode color set 0 test failed	
509-xx	Video 320 x 200 mode color set 1 test failed	
510-xx	Video 640 x 200 mode test failed	
511-xx	Video screen memory page test failed	
512-xx	Video gray scale test failed	
514-xx	Video white screen test failed	
516-xx	Video noise pattern test failed	

Return to top

Diskette Drive Error Codes

Error Code:	Description:	Recommended Action:
600-xx	Disk ID drive types test failed	The following steps apply to error codes 600-xx through 698-xx: 1. Replace the disk and retest. 2. Check and/or replace the disk power and signal cables and retest. 3. Replace the disk drive and retest. 4. Replace the system board and retest.
601-xx	Disk format failed	
602-xx	Disk read test failed	
603-xx	Disk write, read, compare test failed	
604-xx	Disk random seek test failed	
605-xx	Diskette ID media test failed	
606-xx	Disk speed test failed	
607-xx	Disk wrap test failed	

608-xx	Disk write-protect test failed	
609-xx	Disk reset controller test failed	
610-xx	Disk change line test failed	
694-xx	Pin 34 is not cut on 360KB disk drive	
697-xx	Disk type error	
698-xx	Disk drive speed not within limits	
699-xx	Disk drive/media ID error	1. Replace media. 2. Run Setup.

Return to top

Modem Error Codes

Error Code:	Description:	Recommended Action:
1201-xx	Modem Internal Loop-Back Test	The following steps apply to 1201-xx through 1210-xx: 1. Refer to modem documentation procedures. 2. Check the modem line. 3. Replace the modem device.
1202-xx	Modem Time-Out Error	
1203-xx	Modem External Termination Test	
1204-xx	Modem Auto Originate Test	
1206-xx	Dial Multifrequency Tone Test	
1210-xx	Modem Direct Connect Test	

Return to top

Hard Drive Error Codes

Error Code:	Description:	Recommended Action:
1700-xx	Hard drive ID types test failed	The following steps apply to error codes 1700-xx through 1799-xx: 1. Run Setup and verify drive type. 2. Replace the hard drive data and power cables and retest. 3. Replace the hard drive and retest. 4. Replace the system board and retest.
1701-xx	Hard drive format test failed	
1702-xx	Hard drive read test failed	
1703-xx	Hard drive write/read/compare test failed	
1704-xx	Hard drive random seek test failed	
1705-xx	Hard drive controller test failed	
1706-xx	Hard drive ready test failed	
1707-xx	Hard drive recalibration test failed	
1708-xx	Hard drive format bad track test failed	
1709-xx	Hard drive reset controller test failed	
1710-xx	Hard drive park head test failed	
1714-xx	Hard drive file write test failed	
1715-xx	Hard drive head select test failed	
1716-xx	Hard drive conditional format test failed	
1717-xx	Hard drive ECC *(Error Correction Code)* test failed	

1719-xx	Hard drive power mode test failed	
1730-xx	Fixed Disk 0 does not support DMA mode	
1731-xx	Fixed Disk 1 does not support DMA mode	
1740-xx	Fixed Disk 0 failed Set Block Mode command	
1741-xx	Fixed Disk 1 failed Set Block Mode command	
1750-xx	Fixed Disk 0 failed Identity command	
1751-xx	Fixed Disk 1 failed Identity command	
1760-xx	Fixed Disk 0 does not support Block Mode	
1761-xx	Fixed Disk 1 does not support Block Mode	
1790-xx	Disk 0 Configuration Error	
1792-xx	Secondary Disk Controller Failure	
1799-xx	Invalid hard drive type failed	

Return to top

Video Error Codes

Error Code:	**Description:**	**Recommended Action:**

2402-xx	Video memory test failed	The following steps apply to error codes 2402-xx through 2456-xx: 1. Run Setup. 2. Replace the system board and retest.
2403-xx	Video attribute test failed	
2404-xx	Video character set test failed	
2405-xx	Video 80 x 25 mode 9 x 14 character cell test failed	
2406-xx	Video 80 x 25 mode 8 x 8 character cell test failed	
2407-xx	Video 40 x 25 mode test failed	
2408-xx	Video 320 x 200 mode color set 0 test failed	
2409-xx	Video 320 x 200 mode test failed	
2410-xx	Video 640 x 200 mode test failed	
2411-xx	Video screen memory page test failed	
2412-xx	Video gray scale test failed	
2414-xx	Video white screen test failed	
2416-xx	Video noise pattern test failed	
2418-xx	ECG/VGC memory test failed	
2419-xx	ECG/VGC ROM checksum test failed	
2420-xx	ECG/VGC attribute test failed	
2421-xx	ECG/VGC 640 x 200 graphics (256-color mode) test failed	
2422-xx	ECG/VGC 640 x 350 16-color set test failed	

2423-xx	ECG/VGC 640 x 350 64-color set test failed	
2424-xx	ECG/VGC monochrome text mode test failed	
2425-xx	640 x 480 graphics test failure	
2431-xx	640 x 480 graphics test failure	
2432-xx	320 x 200 graphics (256-color mode) test failed	
2448-xx	Advanced VGA Controller test failed	
2451-xx	132-column Advanced VGA test failed	
2456-xx	Advanced VGA 256-color test failed	
2468-xx	Advanced VGA BitBLT test	The following steps apply to error codes 2468-xx through 2480-xx: 1. Run Setup. 2. Replace the system board and retest.
2477-xx	Advanced VGA datapath test	
2478-xx	Advanced VGA BitBLT test	
2480-xx	Advanced VGA Linedraw test	

Return to top

Audio Error Codes

Error Code:	Description:	Recommended Action:
3206-xx	Audio System Internal Error	Replace the system board and retest.

Return to top

CD or DVD Drive Error Codes

Error Code:	Description:	Recommended Action:
3301-xx **3305-xx** **66xx-xx**	CD or DVD drive read test failed	The following steps apply to error codes 3301-xx through 3305-xx and 66xx-xx: 1. Replace the CD or DVD disk and retest. 2. Check the jumper settings on the CD or DVD drive. 3. Check and/or replace the power and signal cables and retest. 4. Replace the CD or DVD drive and retest.

Return to top

Pointing Device Interface Error Codes

Error Code:	Description:	Recommended Action:
8601-xx	Pointing Device Interface test failed	1. Replace with a working device and retest. 2. Replace the system board and retest.

Return to top

CD-RW Drive Error Codes

Error Code:	Description:	Recommended Action:
xxxx-xx	CD-RW drive	The following steps apply to error codes xxxx-xx through xxxx-xx: 1. 2. 3.

Return to top

Troubleshooting Without Diagnostics

This section describes some simple, preliminary tests and guidelines for troubleshooting the computer.

Checklist for Solving Minor Problems:

If you encounter some minor problems with the computer or software applications, go through the following checklist for possible solutions before running any of the diagnostic utilities:

1. Is the computer connected to the working power outlet?
2. Is the computer turned on and the power light illuminated?
3. Are all the cables connected properly and seated?
4. Are all of the necessary device drivers installed?
5. Is the CONFIG.SYS file correct?
6. Is the AUTOEXEC.BAT file (MS-DOS) or STARTUP.CMD file correct?
7. Was a nonbootable diskette loaded in the diskette drive at powe?
8. Are all the switch settings correct?
9. Was Computer Setup run after installing options (memory, disk drives, etc.) and booted before installing industry standard architecture boards?

Quick checks and possible solutions for problems related to these topics:

CD Drive	Disk Drive	Power
DVD Drive	Hard Drive	
USB Ports	Hardware Installation	

In addition, this section provides information for **resolving hardware conflicts**.

CD Drive

Problem	Probable Cause	Possible Solution
Cannot eject compact disc (tray-load only).	CD is not properly seated in the drive.	Turn off the computer, insert a straightened paper clip into the emergency eject hole, then push firmly. Slowly pull the tray out from the drive until the tray is fully extended, then remove the CD.
Cannot read compact disc.	CD is not properly seated in the drive.	Eject the CD, then re-insert it, pressing CD firmly to correctly seat it in the drive.
	CD has been loaded upside down.	Eject the CD, turn it over, then reload.
	CD may be dirty or scratched.	Load another CD disc.
CD drive devices are not detected.	Power cycle delay.	After turning the computer off, wait 30 seconds before turning the computer on again.
	CD drive is not connected properly.	Open the computer and check to see if the cable is connected properly.
	Proper driver is not loaded.	Restart the system and make sure the drivers are loaded.

Return to top

DVD Drive

Problem	Probable Cause	Possible Solution
Cannot read DVD disc.	DVD or CD is not properly seated in the drive.	Eject DVD or CD, press down firmly on the disc to correctly seat it in the drive.
	DVD or CD has been loaded upside down.	Eject the disc, turn it over, then reload.
	DVD or CD disc may be dirty or scratched.	Load another DVD disc.
DVD does not work in the DOS mode.	Proper drivers are not loaded.	Restart the system and make sure the DVD drivers are loaded.
Cannot eject DVD disc.	The system is in the Sleep mode.	Press the Power button to bring the system down full power, then eject the DVD.
	The DVD, disk, or hard drive was active when attempting to eject the DVD.	Wait until all drive activity ends (the CD/hard drive light and disk drive light will go out), then eject the DVD.
	DVD disc is not properly seated in the drive.	Turn off the computer, insert a straight pin into the emergency eject hole, then push firmly. Slowly pull the tray out from the drive until fully extended, then remove the DVD disk.
DVD drive devices are not detected.	DVD drive is not connected properly.	Open the computer and check to see that the cable is connected properly.
	Incorrect driver is installed.	Ensure the correct driver is installed in computer.
	Drive has been changed.	Make sure the jumper setting is set for "Setup."
	Proper drivers are not loaded.	Restart the system and make sure the DVD drivers are loaded.

Return to top

Hard Drive

Problem	Probable Cause(s)	Possible Solutions
Hard drive error occurs.	Hard disk has bad sectors or has failed.	Run Computer Setup. Reformat the hard disk.
Drive not found.	Cable could be loose.	Check cable connections.
Disk transaction problem.	Either the directory structure is bad or there is a problem with a file.	From the desktop click on the Start menu, Programs, Accessories, System Tools, and check for problems. If problems exist, run Scandisk and checkmark the "Automatically fix errors" box at the bottom to correct the problems. If a large enough allocation unit is found, click on the Start button and choose Programs, Accessories, System Tools, Disk Defragmenter.
Nonsystem disk message.	The system is trying to start from a disk that is not bootable.	Remove the disk from the disk drive.
	The system is trying to start from a hard drive but the hard disk is damaged.	Insert a bootable disk into the disk drive and restart the computer with Ctrl+Alt+Del.
	Disk boot is disabled in Computer Setup.	Run Computer Setup and enable disk drives.
Hard drive operation seems slow, or hard drive activity light is not on, or stays on without blinking.	The hard disk files may be fragmented.	From the desktop click on the Start menu, Programs, Accessories, System Tools, and check for problems. If problems exist, run Scandisk and checkmark the "Automatically fix errors" box at the bottom to correct the problems. If a large enough allocation unit is found, click on the Start button and choose Programs, Accessories, System Tools, Disk Defragmenter.

Return to top

Hardware Installation

Problem	Probable Cause(s)	Possible Solutions
A new device is not recognized as part of the computer system.	When the system advised you of changes to the configuration, you did not save the changes.	Reboot the computer and follow the instructions for saving changes.
	The system may not have automatically recognized the new device.	Run Computer Setup and identify the device.
	The cables for the new external device are loose, or the power cables are unplugged.	Check all cables.
	The power switch for the new external device is not turned on.	Turn off the computer, turn on the external device, and then turn on the computer to integrate the new modes of the computer.

Return to top

Power

Problem	Possible Solution
Computer will not turn on.	Ensure that the computer is connected to a power supply.
Computer does not automatically display the date and time.	The real-time clock (RTC) battery may need to be replaced. Click Here for replacement procedures.
Computer does not beep during POST.	The speaker volume may be turned down. Select the **Volume** option from the Control Panel and adjust the volume.
Computer powered off automatically.	The unit temperature may have been exceeded. Check for function and blockage.

Return to top

USB Ports

Problem	Probable Cause(s)	Possible Solution
Port 3 cannot work with any slow speed devices.	The device is plugged into the wrong port.	Check to see if the keyboard is plugged into Port 3. Ensure that the USB device is properly inserted into the port.
USB device does not work with the system.	The USB device and the system may use different USB architectures.	Ensure that the USB device and the system have the same USB architecture. (UHCI-compliant devices only work with a UHCI-compliant system, and OHCI-compliant devices will only work with a OHCI-compliant system.)

Return to top

Disk Drive

Problem	Probable Cause(s)	Possible Solution
Disk drive light stays on.	Disk may be damaged.	Remove disk, insert new diskette into disk drive.
	Disk may be installed incorrectly	Remove disk, reinsert into disk drive.
	Software program may be damaged.	Check the program disk.
Disk drive cannot write to a diskette.	Disk is not formatted.	Format disk. **Important:** Formatting removes all saved information from the disk.
	Disk is write-protected.	Either use another disk that is not write-protected or move the write-protect tab on the disk to the unprotected position
	Writing to the wrong drive.	Check the drive letter in your path statement.
	Not enough space is left on the disk.	Remove disk, insert new disk into disk drive.
Disk drive cannot read a diskette.	Disk is not formatted.	Format disk.
	Using the wrong disk type for the drive type.	Use a disk that is compatible with the drive.
	Reading the wrong drive.	Check the drive letter in your path statement.
	Disk drive has been disabled by Computer Setup.	Run Computer Setup and enable the disk drive.

Return to top

Clearing CMOS

Power-On Self Test (POST)

Configuration

Diagnostic error codes

Troubleshooting without diagnostics

Resolving Hardware Conflicts

Hardware conflicts occur when two or more peripheral devices attempt to use the same hardware resources. I/O addresses, interrupts, and DMA channels are the most common hardware resources used by peripheral devices.

Base I/O address	220H
Interrupt	IRQ 5
8-bit DMA	Channel 1

When different peripheral devices use the same hardware resources at the same time, the devices and/or the system may not function properly. You can resolve hardware conflicts by ensuring that no devices are configured to use the same hardware resources. These resources can either be dipswitch or jumper settings on the peripheral card or software configurable resources. The Computer Setup selection of your Compaq Utilities allows you to view and modify the settings for the peripheral devices factory installed in your computer. Refer to the *User's Guide* for the particular peripheral cards you wish to install for information on how to view and select their settings.

To resolve hardware conflicts:

1. Change the hardware settings of your audio card or other peripheral card in your system. Make sure the peripheral card is using any settings used by the factory-installed devices.
2. If you are unsure of the settings of the peripheral cards, you can isolate the source of the problem by temporarily removing all cards not manufactured by Compaq, or resetting the default settings and running Compaq Utilities. After that, add the cards back one at a time until the card that is causing the conflict is found.

Return to Troubleshooting without diagnostics

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

Models: 5BW420, 5BW430, 5BW431, 5BW432, 5BW433, 5BW440, 5BW451, 5BW460, 5BW462, 5BW470, 5BW471, 5BW472, 5BW473, 5BW474, 5BW480, 5BW481, 5000LA, 5001LA, 5003LAS, 5002LB, 5004LA, 5006US, 5009SR, 5008SR, 5008US, 5010US, 5009CL, 5012US

PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

ILLUSTRATED PARTS CATALOG - INDEX PAGE

Mass Storage Devices

Cables

Standard & Optional Boards

Fax/Modem

Keyboard

Miscellaneous Parts

MASS STORAGE DEVICES

CABLES

STANDARD & OPTIONAL BOARDS

FAX/MODEM

KEYBOARDS

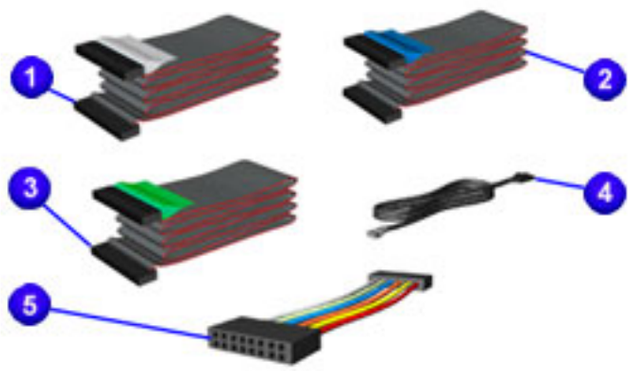
MISCELLANEOUS PARTS

Mass Storage Devices

	Spare Part Description	Spare Part No.
1	**CD, CD-RW, and DVD Drive**	
	CD-ROM Drive 40x Quartz	191160-001 207619-004
	CD-ROM Drive 48x Quartz	214755-001
	CD-RW Drive	212408-004 191162-001
	DVD Drive 12x Quartz	191164-001
	8X CD-RW Drive	190074-001
	DVD Drive 16x Quartz	180593-001
2	**Hard Drives**	
	20.0-GB	197799-001
	40.0-GB	173342-001
	60.0-GB	201527-004 201527-002 201527-001
3	**Disk Drive**	
	1.44-MB Diskette Drive Quartz	191168-001 207614-004

Note	The computer serial number should be provided to Compaq whenever requesting information or ordering spare parts.

Cables



	Spare Part Description	Spare Part No.
1	CD/DVD Drive Data Cable	209863-002 207628-004
2	Hard Drive Data Cable	209865-002 207630-004
3	1.44-MB Diskette Drive Cable (EMEA)	209864-002 207629-004
4	USB Data Cable	202405-001 207631-001 210827-001
5	Front LED/Switch Cable	228575-001
	CD Audio Cable (18-inch)	174773-001
	Telephone Line	137256-001
	Audio Cable	174773-003 207627-004

	Power Cord	Spare Part No.
	Power Cord	207622-001
	Power Cord (Sweden)	292657-111
	US/Latin America/Asia Pacific/Taiwan	142766-001
	Austria	238472-005
	Denmark/EMEA	292657-081
	AC-AU	198292-011
	AC-Europe	121259-001
	AC-Italy	198292-061
	AC-DK	198292-081
	AC-AU	238472-005
	France/Spain	285810-001

MASS STORAGE DEVICES

CABLES

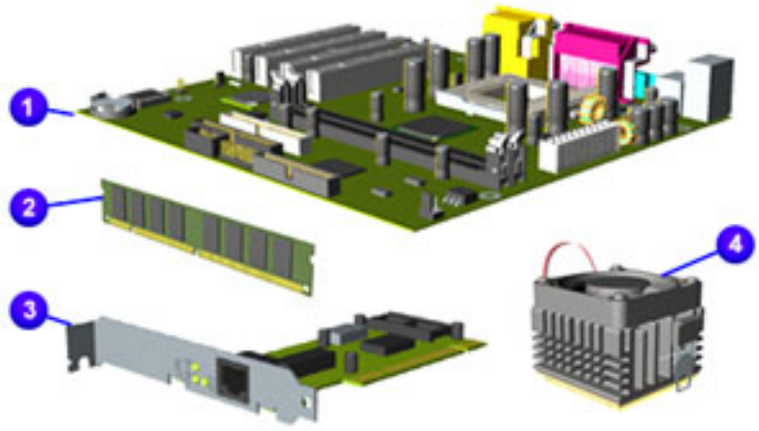
STANDARD & OPTIONAL BOARDS

FAX/MODEM

KEYBOARDS

MISCELLANEOUS PARTS

Standard and Optional Boards



	Spare Part Description	Spare Part No.
1	**System Board**	
	System Board	207613-004 191767-003
2	**Memory Module**	
	64-MB 100-MHz Memory Module DIMM	179190-001
	128-MB 100-MHz Memory Module DIMM	166966-001
3	**Standard and Optional Boards**	
	Network Interface Board 10/100	157045-001 212999-004
4	**Microprocessor/Heatsink Assembly**	
	Processor	
	Celeron 700	202112-001 202112-002
	Cop 933 (133)	180739-001
	Cop 1.0 (133)	180738-001 180738-002 180738-004
	Cop 1.1 (133)	Not available

MASS STORAGE DEVICES

CABLES

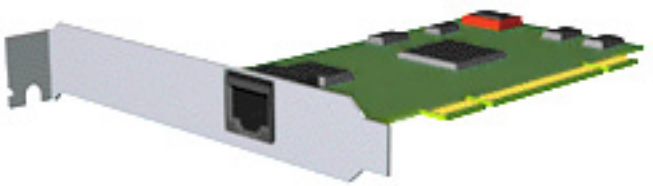
STANDARD & OPTIONAL BOARDS

FAX/MODEM

KEYBOARDS

MISCELLANEOUS PARTS

Fax/Modem



Spare Part Description	Spare Part No.
56K Modem - Scooter (Latin America Excluded)	166358-002
Modem - Enduro	207616-004 166386-001
Modem Adapters	
Modem Adapters-International	198293-002
Modem Adapters-Sweden	198294-111
Adapters	
RJ11 P55 Adapter	316920-331
RJ11 P55 Adapter (Sweden)	316904-101
RJ11 Adapter (Finland)	304398-351
RJ11 Adapter	304398-181
RJ11 Adapter	316904-081
RJ11 Adapter	304398-051
RJ11 Adapter	304398-011
RJ11 Adapter	158593-031
RJ11 Adapter	316904-061
PTT/ RJ11 Adapter	158593-031

MASS STORAGE DEVICES

CABLES

STANDARD & OPTIONAL BOARDS

FAX/MODEM

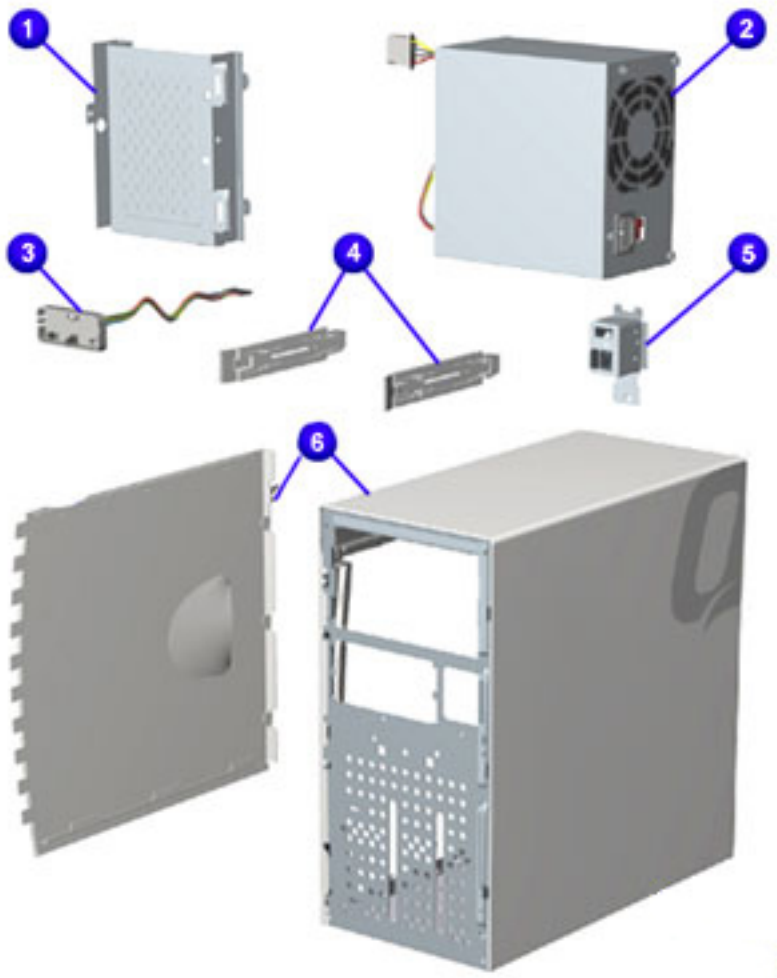
KEYBOARDS

MISCELLANEOUS PARTS

Keyboards

Spare Part Description	Spare Part Number
USB Internet Keyboard (U.S)	207624-004 180190-007
USB Internet Keyboard (U.K)	180190-037
USB Internet Keyboard (France)	180190-057
USB Internet Keyboard (Italy)	180190-067
USB Internet Keyboard (Spain)	180190-077
USB Internet Keyboard (Denmark)	180190-087
USB Internet Keyboard (Norway)	180190-097
USB Internet Keyboard (Sweden)	180190-107
USB Internet Keyboard (Switzerland)	180190-177
USB Internet Keyboard (Latin America)	180190-167
USB Internet Keyboard (Belgium)	180190-187
USB Internet Keyboard (Brazil)	180190-207
USB Internet Keyboard (Thailand)	180190-287
USB Internet Keyboard (Finland)	180190-357
USB Internet Keyboard (China)	180190-AB7
USB Internet Keyboard (International)	180190-B37
USB Internet Keyboard	207620-004

Miscellaneous Parts



	Spare Part Description	Spare Part No.
1	(2) Hard Drive Brackets (4 Screws)	210833-001 195413-002
2	Power Supply 200/250	153652-002
3	Power Switch w/Holder	199354-001
4	3.5 inch Drive Rails (left/right side)	199353-002 210005-004
	5.25 inch Drive Rails (left/right side)	210830-002 207625-004
5	Front I/O Assembly	209866-001 207624-004
6	Chassis Assembly w/side door	210828-001 199352-002
	Front Bezel Assembly	210834-001 199357-002 207626-004
	Trim Ring (Top Door)	210835-002 199355-003
	Lower Trim Ring (CD Storage Door)	210832-001 199356-002
	Trim Ring Lock	202455-001 210831-001
	Mouse	195503-001 207621-004
	Return Kit	202132-001 207623-004
	Power Cord	142766-001

Compaq Presario Internet PC 5000 Series Computers

Models: 5BW420, 5BW430, 5BW431, 5BW432, 5BW433, 5BW440, 5BW451, 5BW460, 5BW462, 5BW470, 5BW471, 5BW472, 5BW473, 5BW474, 5BW480, 5BW481, 5000LA, 5001LA, 5003LAS, 5002LB, 5004LA, 5006US, 5009SR, 5008SR, 5008US, 5010US, 5009CL, 5012US

PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

REMOVAL & REPLACEMENT PROCEDURES - INDEX PAGE

This section provides general service information for Compaq Series Personal Computers. Adherence to the procedures and precautions described in this section is essential for safe and proper service.

Electrostatic Discharge

Service Considerations

Preparation for Disassembly

Serial Number

Side Access Panel

Expansion Card

Memory Module

Hard drive

Diskette drive

Removing the Top Door

Removing the CD Storage Door
(Lower Front Panel)

Opening the CD Storage Door

Optical and Mass Storage Devices
CD, CD-RW and/or DVD drive
Hard Drive
Disk Drive

Power Supply Assembly

Front I/O Board

System Board and Components
RTC Battery
Microprocessor/Heatsink Assembly

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Electrostatic Discharge

A sudden discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not be affected at all and will work perfectly throughout a normal cycle. Or it may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.

Generating Static

The table below shows the different amounts of static electricity generated by different activities.

Relative Humidity			
Event	**10%**	**40%**	**55%**
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tubes	2,000 V	700 V	400 V
Removing DIPS from vinyl trays	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCBs	26,000 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V
NOTE: 700 volts can degrade a product			

Preventing Electrostatic Damage to Equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following proper packaging and grounding precautions are necessary to prevent damage:

1. Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
2. Keep electrostatic sensitive parts in their containers until they arrive at static-free stations.
3. Place items on a grounded surface before removing them from their container.
4. Always be properly grounded when touching a sensitive component or assembly.
5. Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Use transporters and conveyors made of antistatic belts and metal roller bushings. To avoid static charging, mechanized equipment used for moving materials must be wired to ground. When grounding is not possible, use an ionizer to dissipate electric charges.

Preventing Damage to Drives

To prevent static damage to hard drives, use the following precautions.

1. Handle drives gently, using static-guarding techniques.
2. Store drives in the original shipping containers.
3. Avoid dropping drives from any height onto any surface.
4. Handle drives on surfaces that have at least one inch of shock-proof foam.
5. Always place drives PCB assembly side down on the foam.

Grounding Methods

The method for grounding must include a wrist strap or a foot strap at a grounded workstation. When seated, wear a wrist strap connected to a grounded system. When standing, use footstraps and a grounded floor mat.

Static-Shielding Protection Levels			
Method	Antistatic Plastic	Carbon-Loaded Plastic	Metallized Laminate
Voltages	1,500	7,500	15,000

Grounding Workstations

To prevent static damage at the workstation, use the following precautions:

1. Cover the workstation with an approved static-dissipative material. Provide a wrist strap connected to the work surface and use properly grounded tools and equipment.
2. Use static-dissipative mats, heel straps, or air ionizers to give added protection.
3. Handle electrostatic-sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free workstations.
4. Avoid contact with pins, leads, or circuitry.
5. Turn off power and input signals before inserting and removing connectors or test equipment.
6. Use fixtures made of static-safe materials when fixtures must contact dissipative surfaces directly.
7. Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
8. Use field service tools, such as cutters, screwdrivers, and vacuums that are conductive.
9. Use a portable field service kit with a static dissipative vinyl pouch that folds out of a work mat. Also use a wrist strap and a ground cord for the work surface. Ground the cord to the chassis of the equipment undergoing test or repair

Ground Equipment

Use the following equipment to prevent static electricity damage to the equipment:*Wrist Straps* are flexible straps with a minimum of 1 megohm plus or minus 10% resistance to the ground cords. To provide proper ground, a strap must be worn snugly against the skin. On grounded mats without banana-plug connectors, connect a wrist strap to the mat with alligator clips.

Heelstraps/Toestraps/Bootstraps can be used at standing workstations and are compatible with most types of boots and shoes. On conductive floors or dissipative floor mats, use them on both feet with a minimum of 1 megohm resistance between operator and ground. To be effective, the conductive strips must be worn in contact with the skin.

Recommended Materials and Equipment

Other materials and equipment that are recommended for use in preventing static electricity include:

1. Antistatic tape
2. Antistatic smocks, aprons, or sleeve protectors
3. Conductive bins, and other assembly or soldering aids
4. Conductive foam
5. Conductive tabletop workstations with ground cord of 1 megohm of resistance
6. Static dissipative table or floor mats with a hard tie to ground
7. Field service kits
8. Static awareness labels
9. Wrist straps and footwear straps providing 1 megohm plus or minus 10% resistance
10. Material handling packages
11. Conductive plastic bags
12. Conductive plastic tubes
13. Conductive tote boxes
14. Metal tote boxes
15. Opaque shielding bags
16. Transparent metallized shielding bags
17. Transparent shielding tubes

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Tool Requirements

1. Phillips screwdriver
2. Needle-nose pliers
3. Flathead screwdriver
4. Compaq Utilities software

Screws

The screws used in these products are not interchangeable. If an incorrect screw is used during the reassembly process, it could cause damage to the unit. Compaq strongly recommends that all screws removed during the disassembly process be kept with the corresponding part that was removed, then returned to their proper locations.

Important	As each subassembly is removed from the computer, it should be replaced away from the work area to prevent damage.

Cables and Connectors

Most cables used throughout the unit are *ribbon cables*. These must be handled gently to avoid damage. Apply only the tension required to seat or unseat the cable insertion or removal from the connector. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing the cables, and ensure that they cannot be caught or snagged by parts being removed.

CAUTION	When servicing these computers, ensure that cables are placed in their proper location during the reassembly process. Improper cable placement can cause severe damage to the unit.

Ribbon Cable Positions Index

CD/CD-RW, and DVD	Power Button
Disk Drive	Front I/O Board
Hard Drive	Power Supply Assembly

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

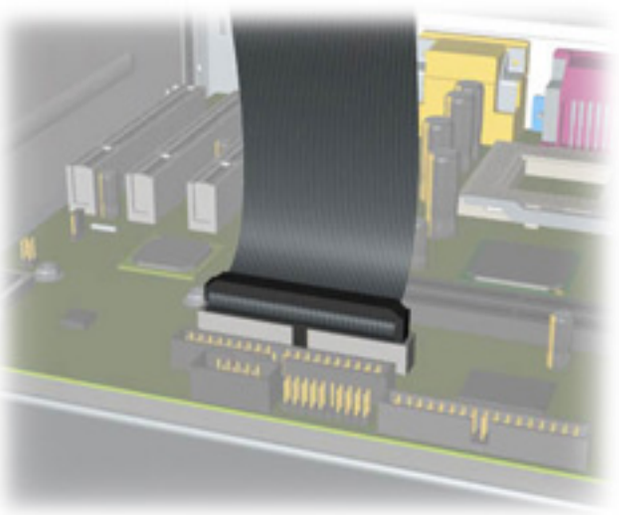
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Cable Positions: CD/CD-RW, and DVD



This image indicates the cable routing for the CD, CD-RW, and/or DVD Drive to the system board.

Return to Service Considerations Index

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

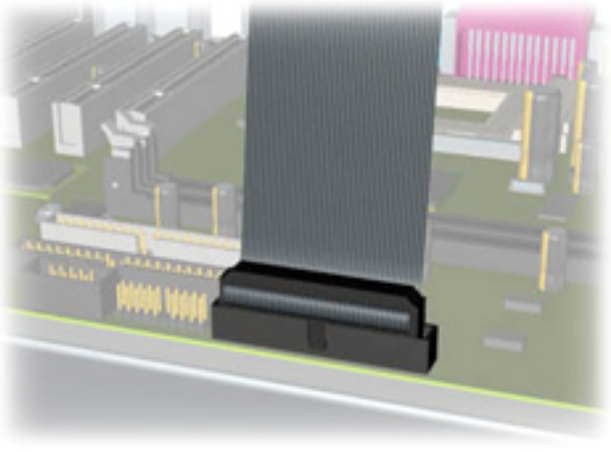
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Cable Positions: Diskette Drive



This image indicates the cable routing for the Disk Drive to the system board.

Return to Service Considerations Index

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

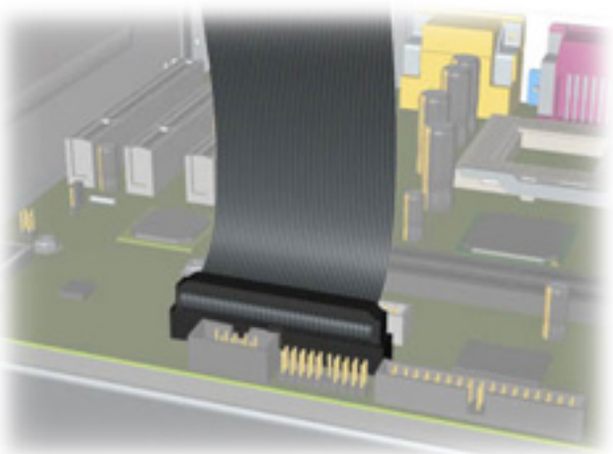
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Cable Positions: Hard Drive



This image indicates the cable routing for the Hard Drive to the system board.

Return to Service Considerations Index

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

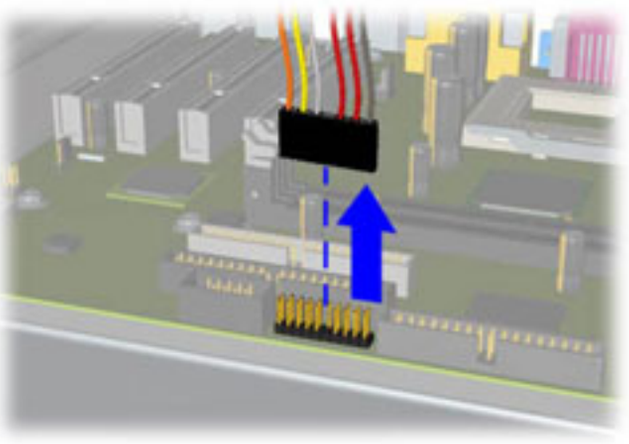
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Cable Positions: Power Button



This image indicates the cable routing for the Power Button to the system board.

Return to Service Considerations Index

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

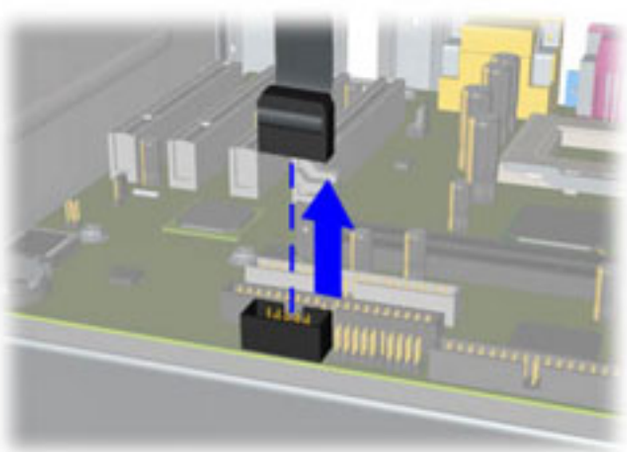
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Cable Positions: Front I/O Board



This image indicates the cable routing for the Front I/O Board (USB connector) to the system board.

Return to Service Considerations Index

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

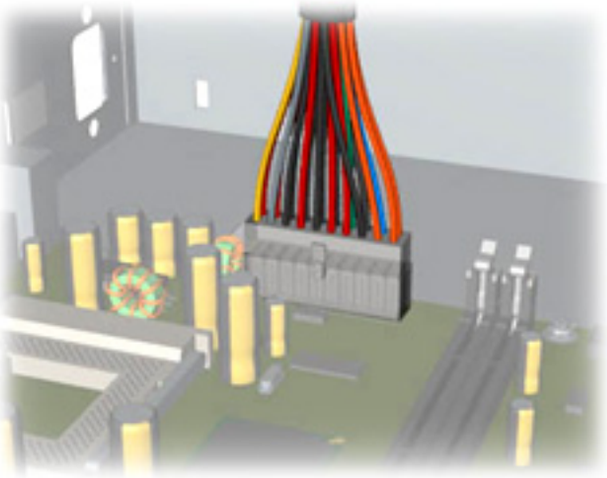
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Service Considerations

Cable Positions: Power Supply Assembly



This image indicates the cable routing for the Power Supply Assembly to the system board.

Return to Service Considerations Index

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

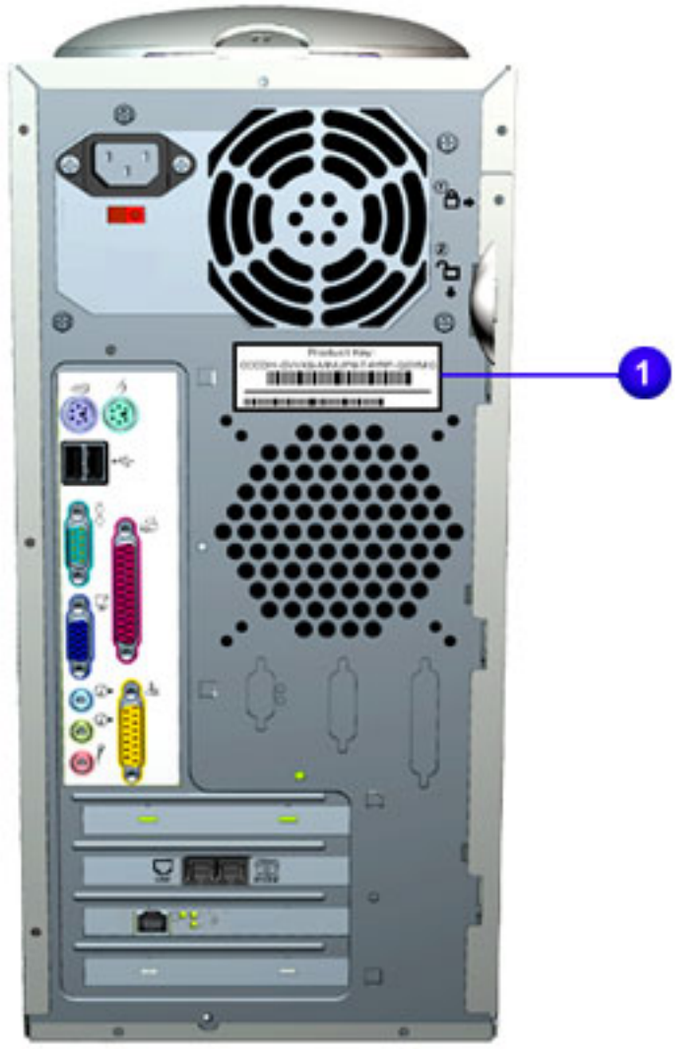
POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Serial Number

Provide Compaq with the computer serial number whenever requesting information or ordering spare parts. The serial number is located directly above the rear connectors.



ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

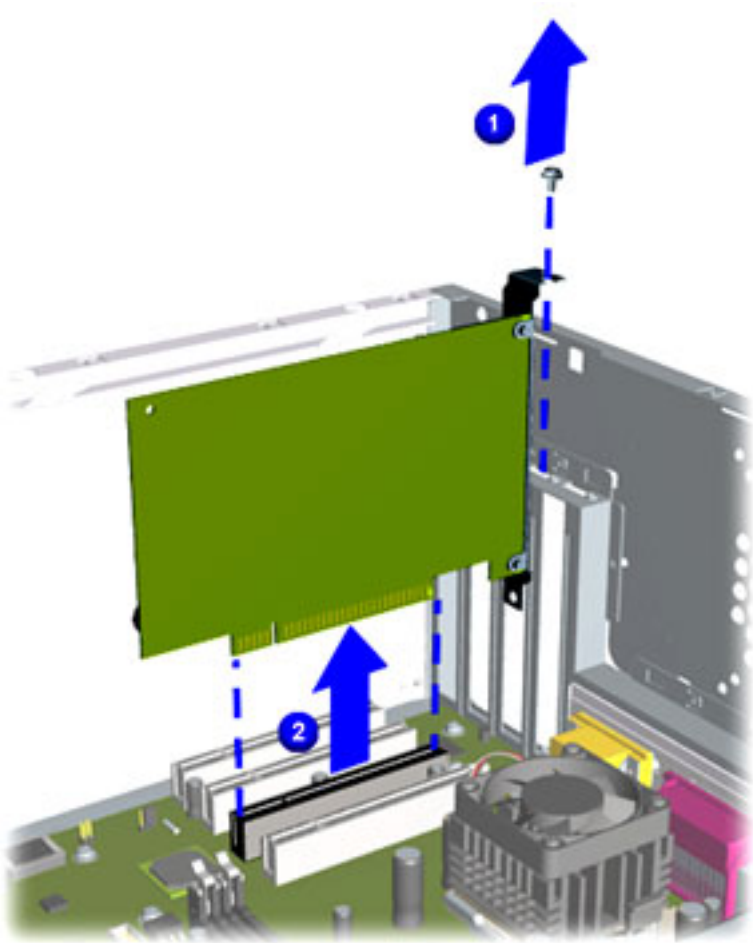
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Expansion Card (Modem or Network Interface Card)



Removal

1. Perform the preparation procedures.
2. Turn the computer on its side (open side facing up) and locate the expansion card(s).
3. Remove the screw securing the expansion card.
4. Pull the expansion card using a gentle rocking motion from the connector on the system board.

Replacement

Important: The expansion card rear connector must be properly inserted into the rear chassis slot to ensure the card is properly seated into the connector on the system board.

1. Align the card with connector on the system board and rear connector slots on the chassis.
2. Replace the screw to secure the expansion card to the chassis.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

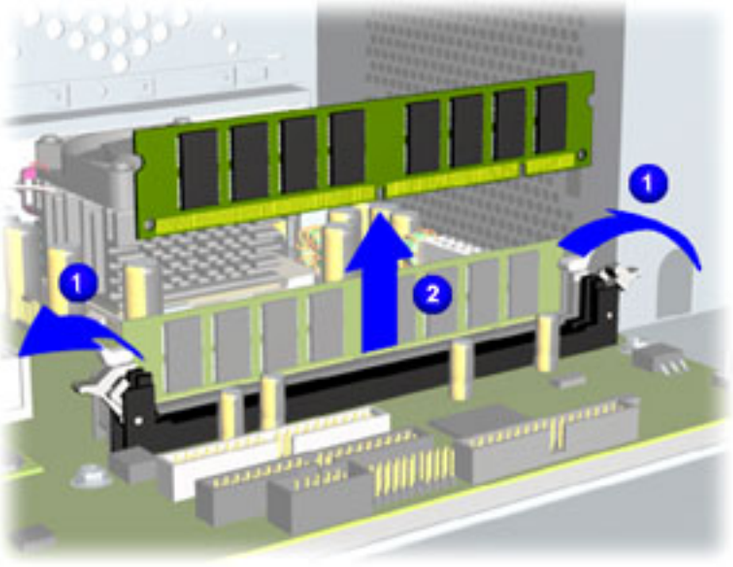
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Memory Module



Removal

1. Perform the preparation procedures.
2. Pull down and outward (1) on the release latches found at each end of the memory module.
3. Lift the memory module (2) from the system board slot.

Replacement

1. Ensure that the latches (1) at each end of the memory modules are released.
2. Align the memory module with the memory slot.
3. Push the module carefully and firmly into the slot, ensuring that the latches at each end snap into place.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

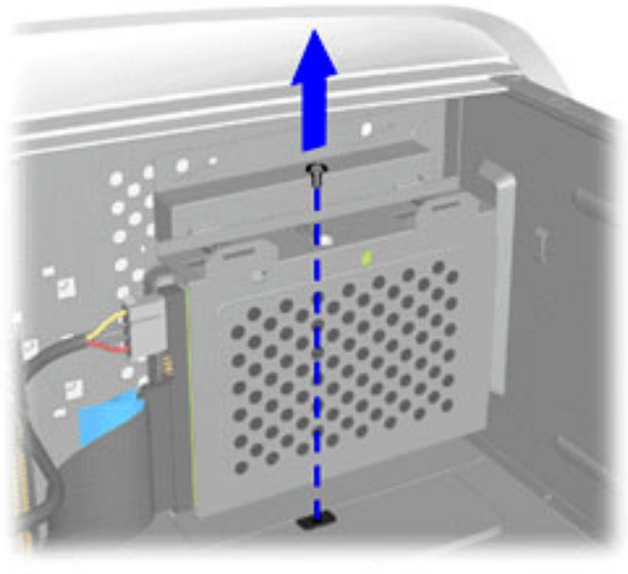
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Hard Drive



Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Remove the screw securing the hard drive bracket to the chassis wall.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

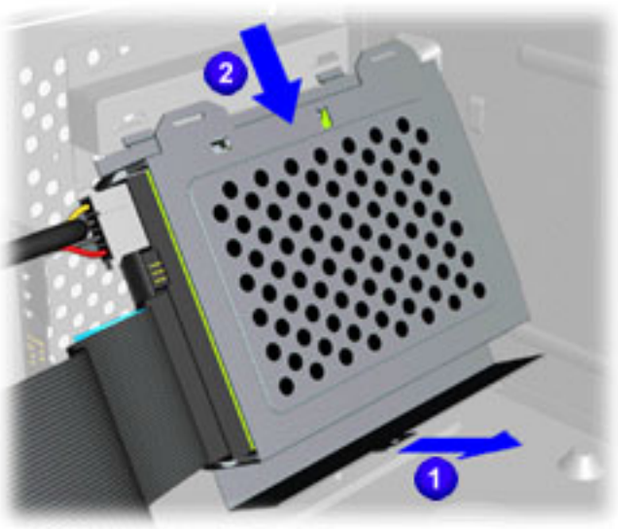
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Hard Drive, Continued



Removal

4. Lift the hard drive bracket from the bottom (1) toward the interior of the chassis.
5. Slide the hard drive bracket (2) (with hard drive attached) from the chassis slots to remove it.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

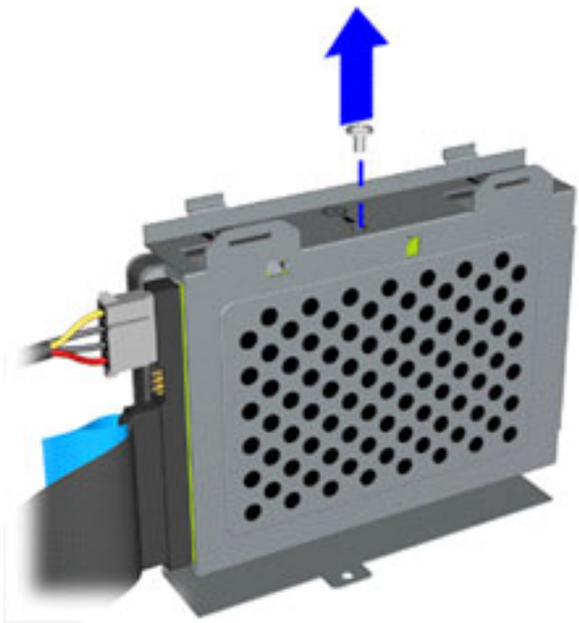
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Hard Drive, Continued



Removal

6. Remove the screw securing the hard drive to the hard drive bracket.

NextStep

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

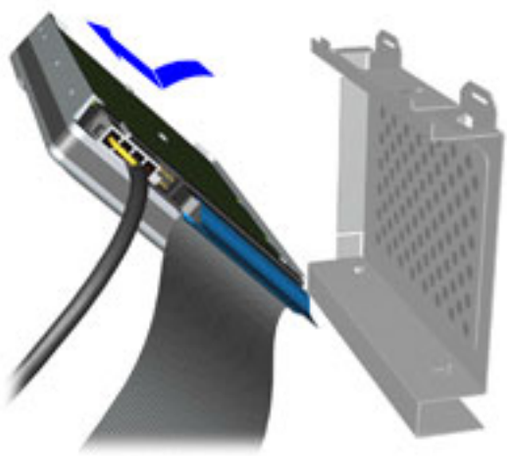
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Hard Drive, Continued



Removal

7. Remove the hard drive from the hard drive bracket.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

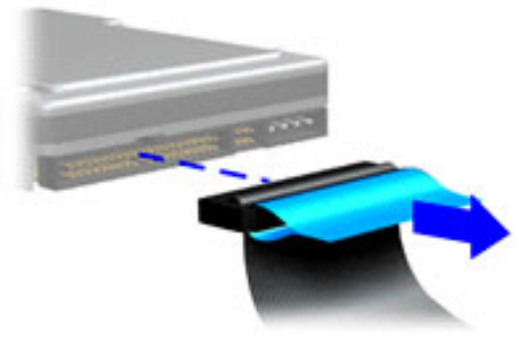
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Hard Drive, Continued



Removal

8. Disconnect the hard drive data cable using a gentle rocking motion.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD
(Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR
(Lower Front Panel - Open the CD Storage Door)

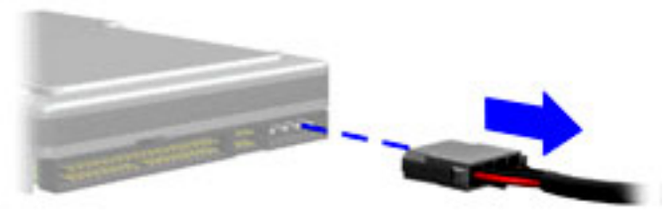
OPTICAL AND MASS STORAGE DEVICES
(CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS
(RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Hard Drive, Continued



Removal

9. Disconnect the hard drive power cable using a gentle rocking motion.

Replacement

To replace the hard drive and bracket, reverse the previous procedure.

Return to Optical and Mass Storage Index Page

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Optical and Mass Storage Devices—Index Page

1. CD,CD-RW and/or DVD Drive
2. Disk Drive
3. Hard Drive

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

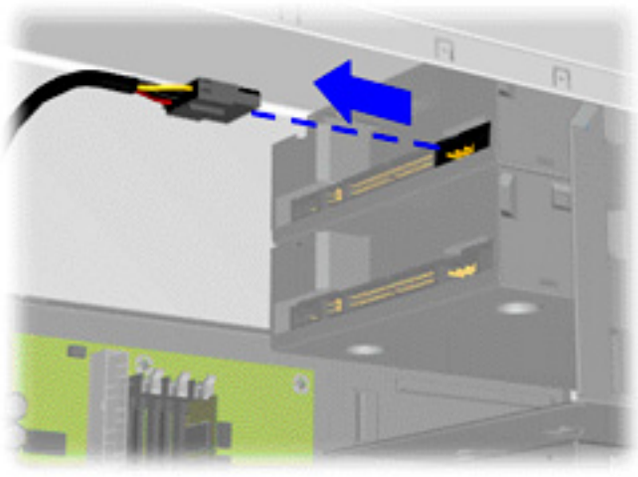
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the CD, CD-RW and/or DVD Drive



Removal

To remove the CD, CD-RW and/or DVD drive, complete the following steps:

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Unlock the front panel door lock.
4. Open the CD storage door.
5. Remove the top door.
6. Disconnect the power cable from the drive.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

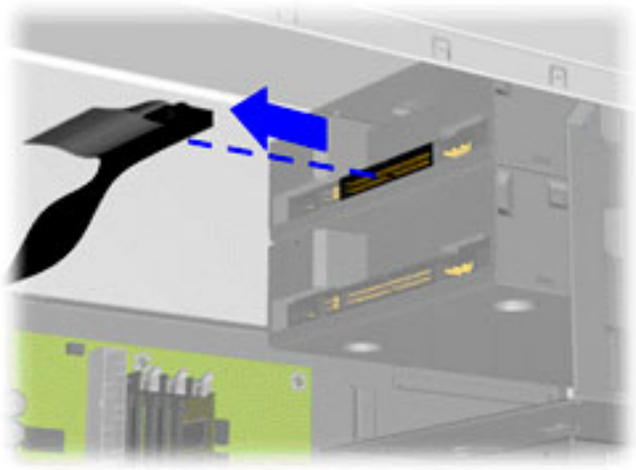
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the CD, CD-RW and/or DVD Drive



Removal

7. Disconnect the data cable from the drive.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the CD, CD-RW and/or DVD Drive

Removal

9. To release the drive, press inward on the side rails (1) of the drive and pull the drive (2) from the chassis.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the CD, CD-RW and/or DVD Drive Rails

Removal

To remove the drive rails, complete the following step:

Pull the drive rails from each side of the drive using a gentle rocking motion.

Replacement

To replace the drive rails, reverse the previous procedure.

Return to Optical and Mass Storage—Index Page

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

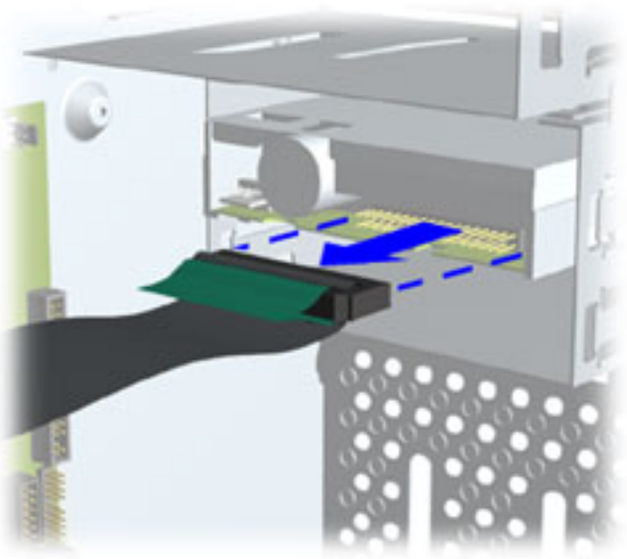
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Disk Drive



Removal

To remove the diskette drive, complete the following steps:

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Unlock the front panel door lock.
4. Open the CD storage door.
5. Remove the top door.
6. Disconnect the data cable connected to the drive.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

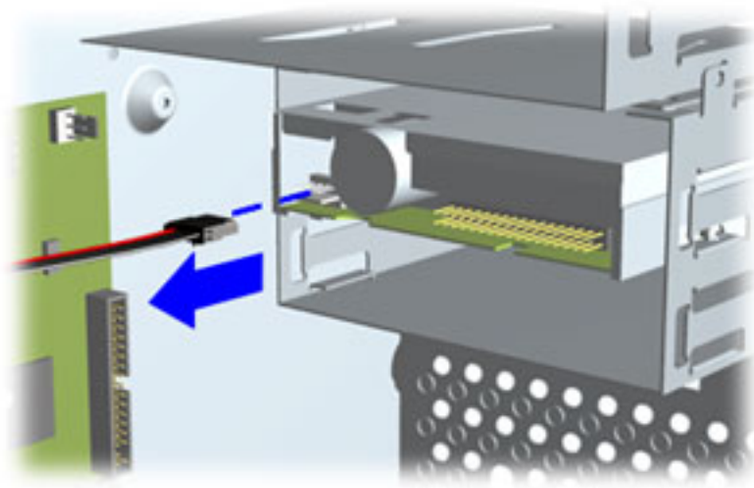
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Disk Drive, Continued



Removal

7. Disconnect the power cable connected to the drive.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

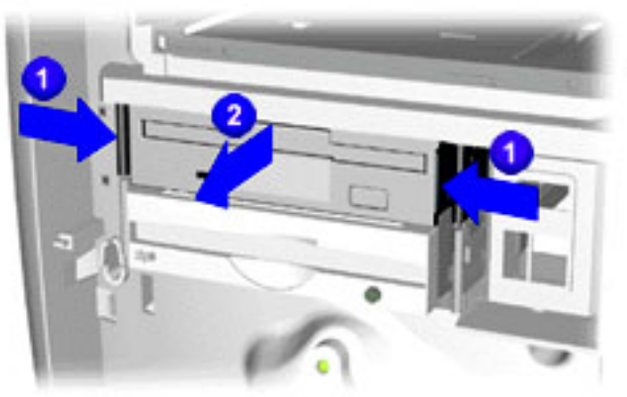
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Disk Drive, Continued



Removal

8. To release the drive, press inward on the side rails 1 of the drive and pull the drive 2 from the chassis.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Disk Drive Rails

Removal

To remove the drive rails, complete the following step.

Pull the drive rails using a gentle rocking motion from each side of the drive.

Replace

To replace the drive rails reverse the previous procedure.

Return to Optical and Mass Storage—Index Page

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

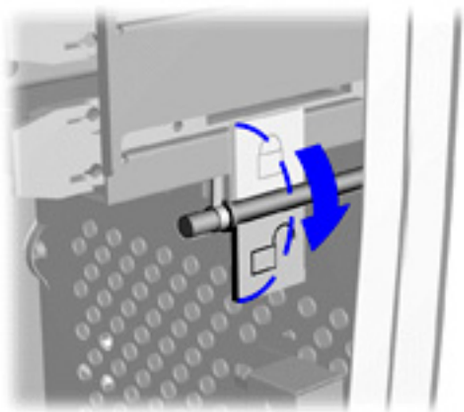
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Top Door



Removal

1. Perform the preparation procedures.
2. Remove the side access pane.
3. Rotate the lock to the down position to unlock the upper front panel.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Top Door, Continued

Removal

4. Press the indention located at the top of the CD Storage door to open.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

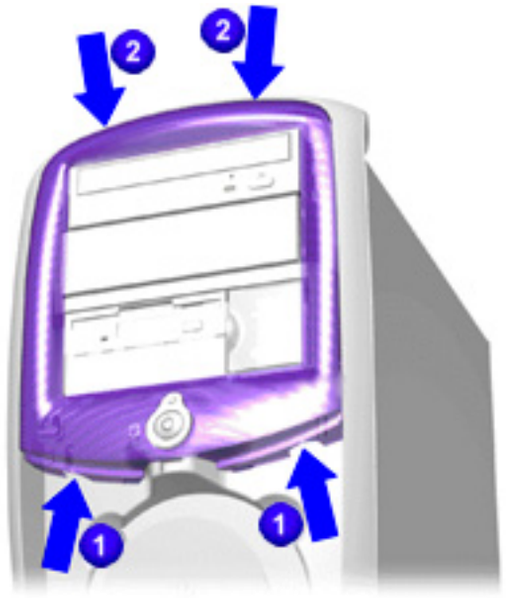
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Top Door, Continued



Removal

5. Press your fingers into the indentations at the bottom of the top door (1). Pull the top door forward until the top door tabs (2) release from the slots on the chassis.

Replacement

To replace the top door, reverse this procedure.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

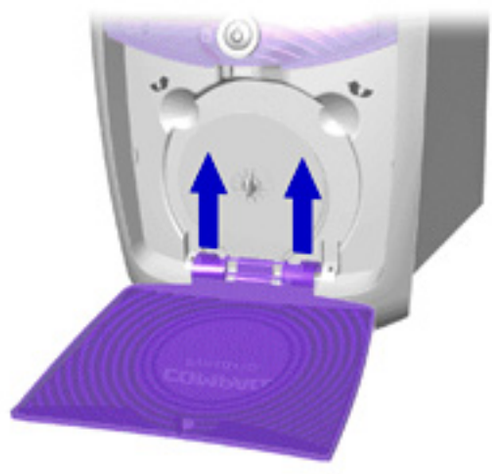
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the CD Storage Door (Lower Front Panel)



Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Unlock the upper front panel.
4. Open the CD storage door.
5. Lift the CD storage door slightly with both hands while pressing both tabs with your thumbs at the same time. Lift the CD storage door to release from the chassis.

Replacement

To replace the CD storage door, reverse this procedure.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Power Supply Assembly

Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Remove the four screws located at the top of the rear of the chassis.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

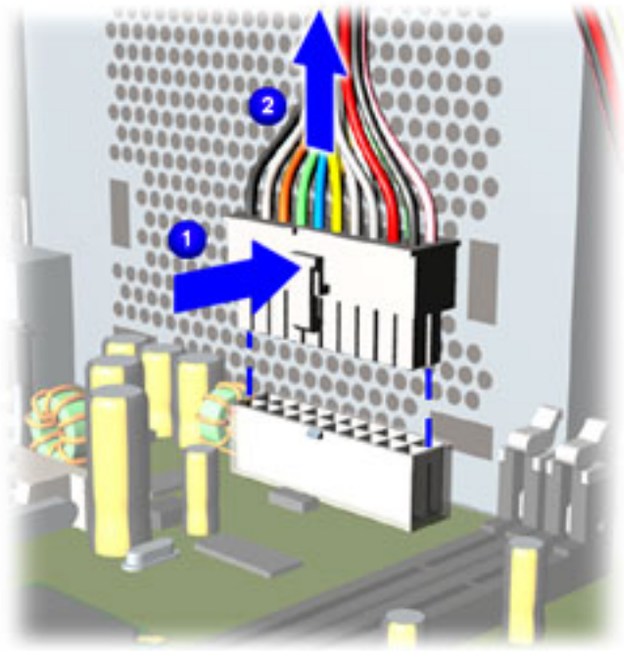
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Power Supply Assembly, Continued



Removal

4. Push the top of the power supply cable clip 1 inward and pull the power cable 2 from the connector on the system board.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

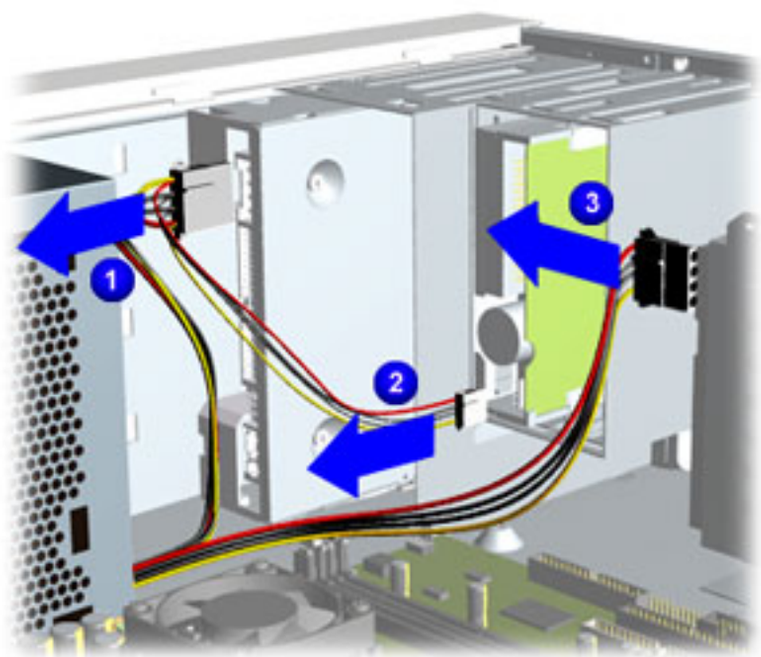
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Power Supply Assembly, Continued



Removal

5. Disconnect the power supply power cables from the CD, CD-RW, and/or DVD drive, disk drive, and hard drive.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

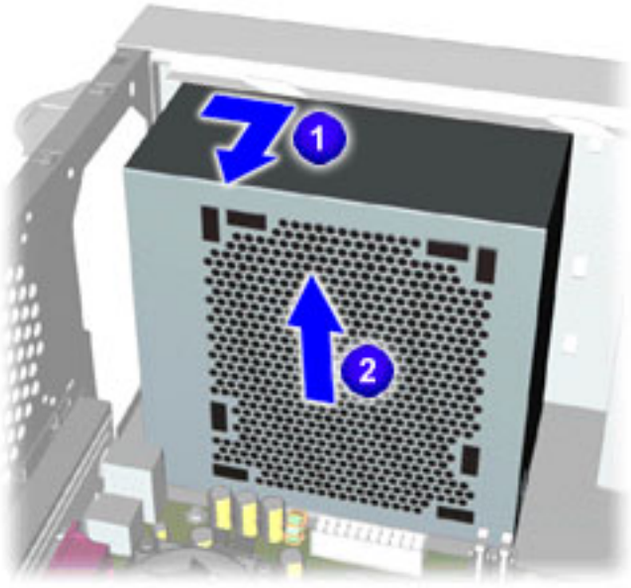
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Power Supply Assembly, Continued



Removal

6. Pull the power supply from the chassis by moving it slightly inward and lifting up.

Replacement

To replace the power supply assembly, reverse this procedure.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD
(Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR
(Lower Front Panel - Open the CD Storage Door)

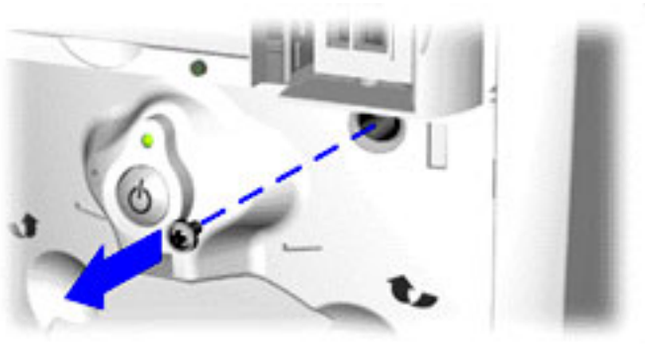
OPTICAL AND MASS STORAGE DEVICES
(CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS
(RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Front I/O Board



Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Unlock the front panel door lock.
4. Remove the CD storage door .
5. Remove the top door.
6. Remove the screw securing the Front I/O bracket to the front of the chassis.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

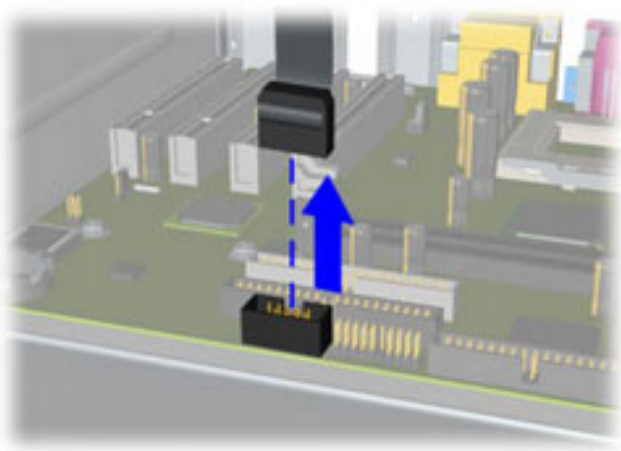
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Front I/O Board, Continued



Removal

7. Remove the USB cable from the connector on the system board.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

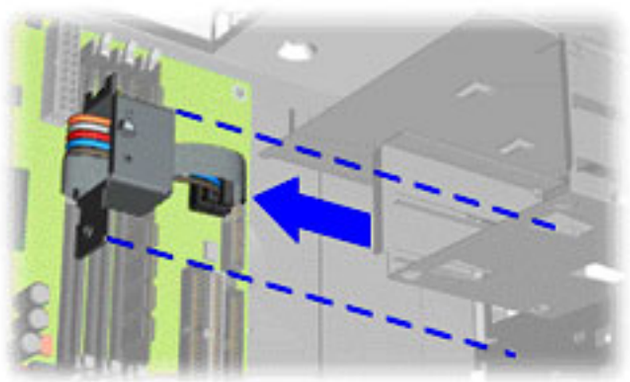
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Front I/O Board, Continued



Removal

8. Remove the Front I/O Board from inside the chassis.

Replacement

To replace the Front I/O bracket, reverse these procedures.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

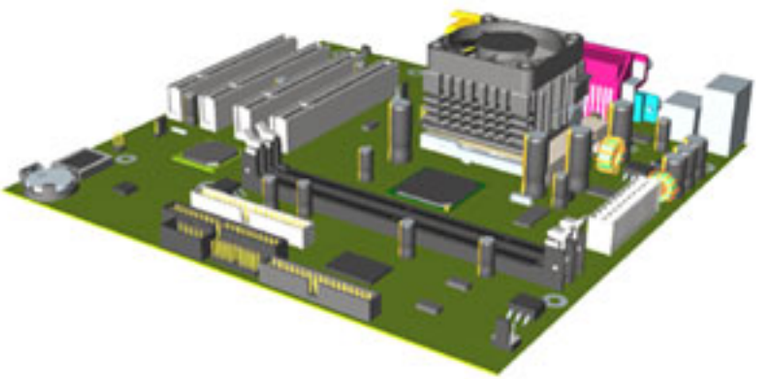
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

System Board Components—Index Page



System Board

Microprocessor/Heatsink Assembly
Intel (Socket 370)

RTC battery

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

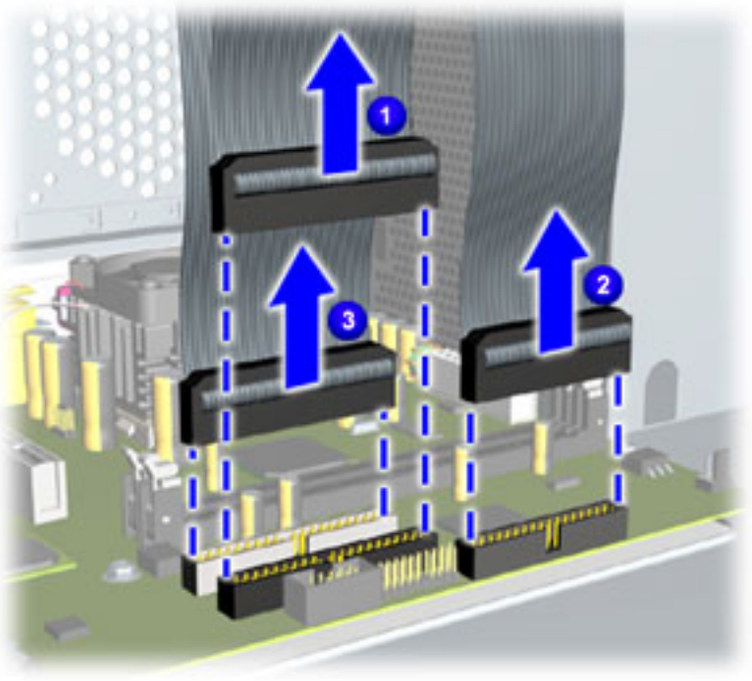
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the System Board



Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Remove the memory module.
4. Remove the microprocessor / heatsink assembly.
5. Remove the expansion card(s).
6. Disconnect the power supply from the system board.
7. Disconnect the Front I/O (USB) cable from the system board.
8. Disconnect the hard drive, disk drive, CD-RW, CD-ROM, and/or DVD drive data cables from the system board.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

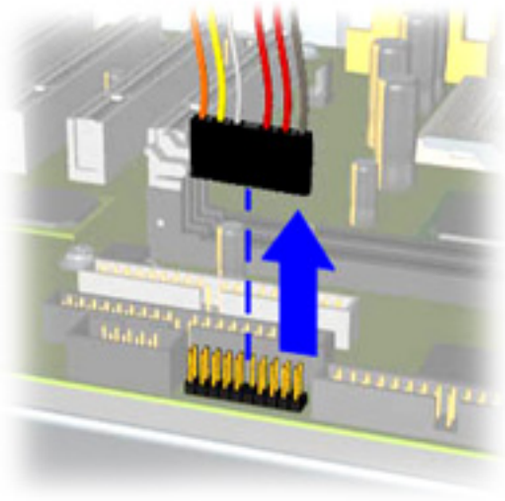
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the System Board, Continued



Removal

9. Disconnect the power button cable from the system board.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

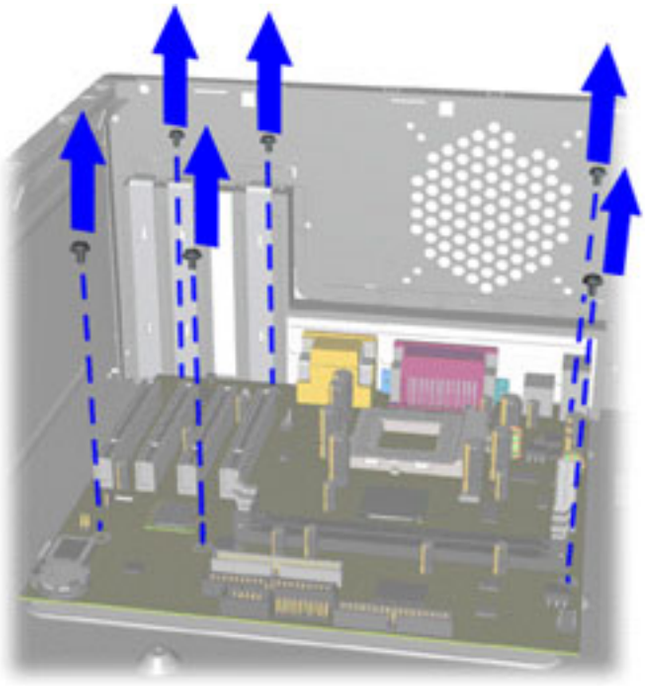
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the System Board, Continued



Removal

9. Remove six screws from the system board

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD
(Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR
(Lower Front Panel - Open the CD Storage Door)

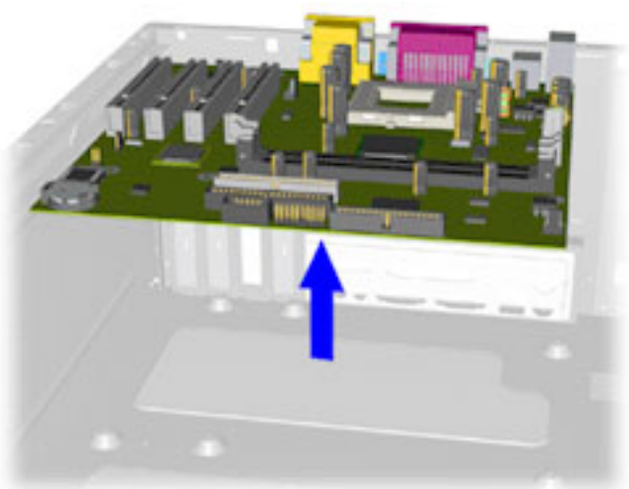
OPTICAL AND MASS STORAGE DEVICES
(CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS
(RTC Battery, Microprocessor/Heatsink Assembly)

Removing the System Board, Continued



Removal

11. Remove the system board from the chassis.

Replacement

To replace the system board, reverse the previous procedure.

Return to System Board Components—Index page

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

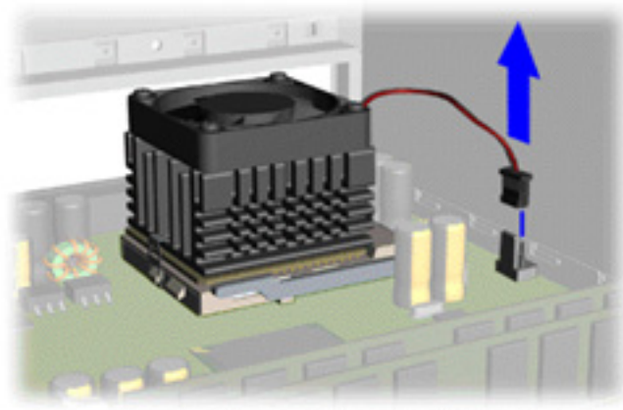
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Intel (Socket 370) Microprocessor/Heatsink Assembly



Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Disconnect the fan cable from the system board.

Next Step

WARNING The microprocessor may still be hot if the computer was recently used. Allow the microprocessor to cool before removing.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

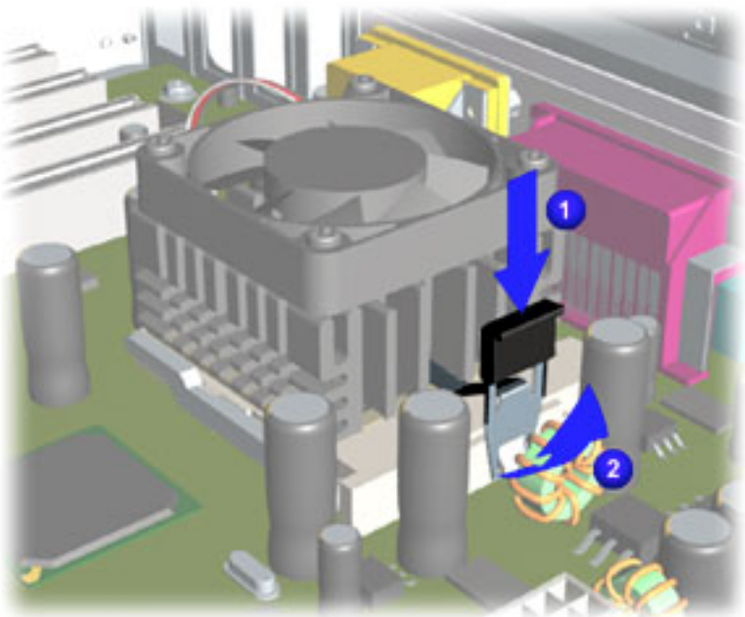
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Intel (Socket 370) Microprocessor/Heatsink Assembly, Continued



Removal

5. Remove the clip holding the microprocessor / heatsink assembly by pushing down on the tab 1 and pushing outward on the bottom portion of the tab 2 to release.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

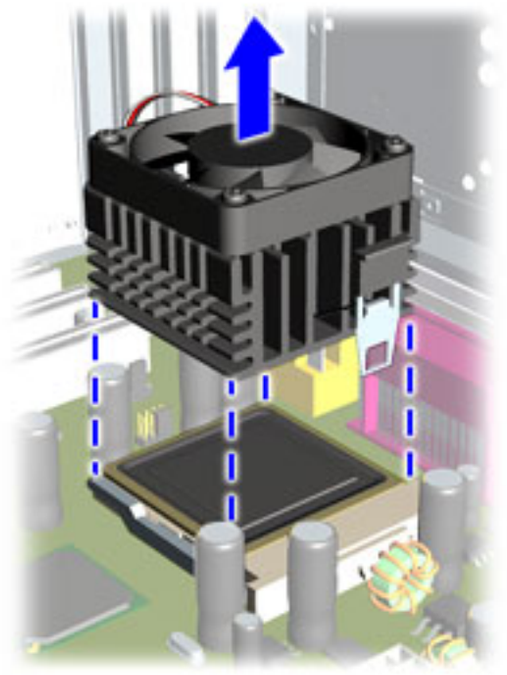
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Intel (Socket 370) Microprocessor/Heatsink Assembly, Continued



Removal

5. Lift the microprocessor / heatsink assembly from the microprocessor interface.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

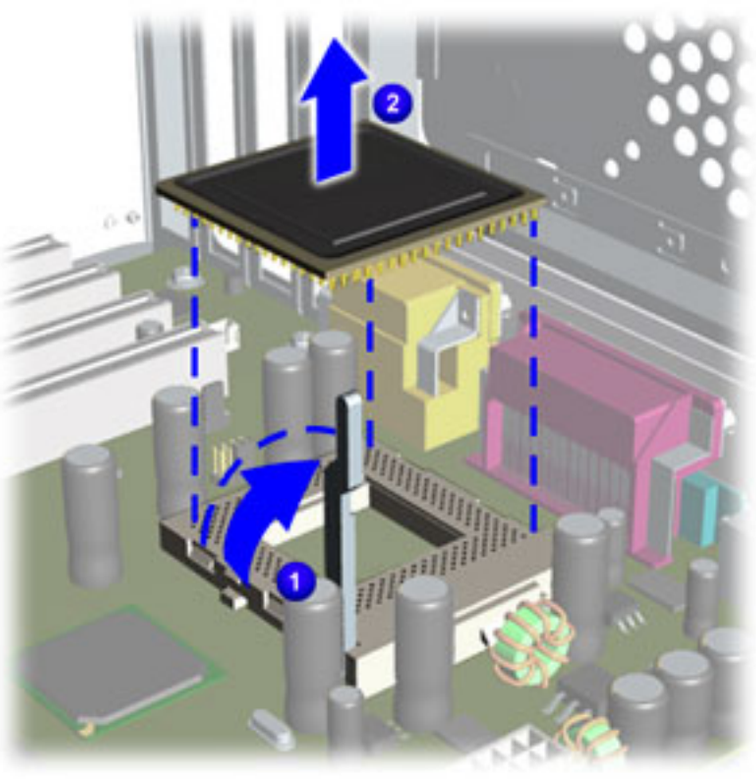
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the Intel (Socket 370) Microprocessor/Heatsink Assembly, Continued



Removal

4. Lift up the lever (1) that holds the microprocessor to the microprocessor interface. Lift the microprocessor (2) from the chassis.

Replacement

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

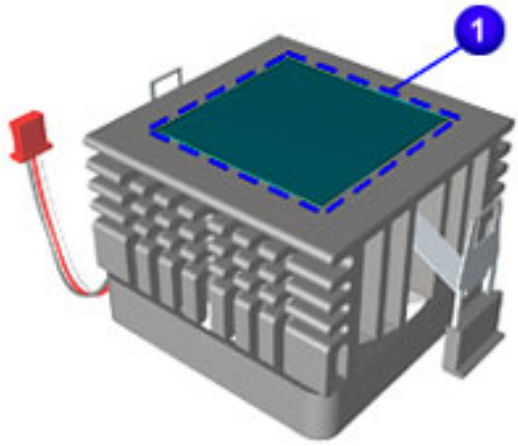
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly



Replacement

IMPORTANT: Replace the thermal pad only when replacing the system board.

1. Turn the heatsink over and place it on a flat surface. Locate the old thermal pad 1 on the bottom of the heatsink.

Next Step

IMPORTANT	The microprocessor assembly should be replaced on the system board before securing the system board into the chassis.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

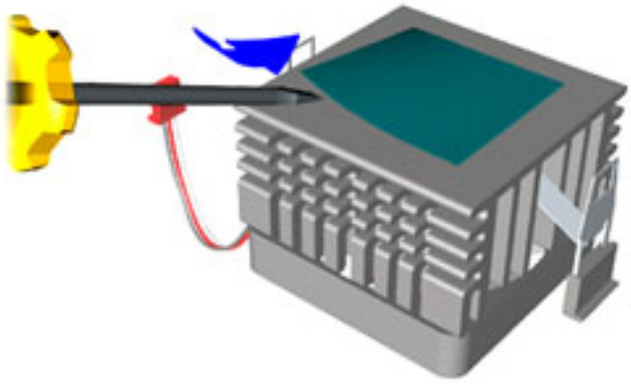
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly



Replacement

2. Remove the old thermal pad with a flathead screwdriver or similar type scraping tool. Scrape off any residue left on the heatsink after removing the thermal pad.

Next Step

IMPORTANT	The microprocessor assembly should be replaced on the system board before securing the system board into the chassis.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

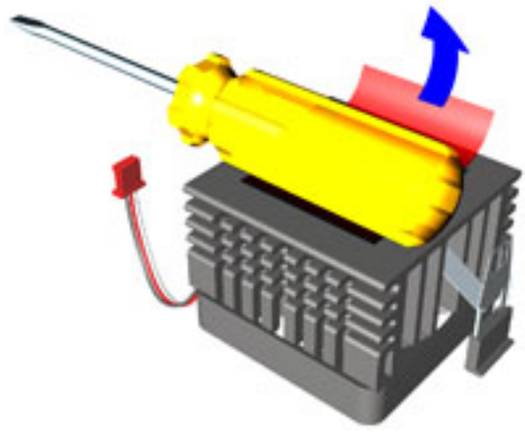
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly, Continued



Replacement

3. Remove the clear plastic film.
4. Place the new thermal pad (plastic film side up) onto the heatsink in the same position as the old thermal pad.
5. With the round portion of the screwdriver handle, rub the top of the new thermal pad to ensure that the entire pad sticks to the heatsink.
6. Quickly remove the remaining plastic film.

Next Step

WARNING	If the new thermal pad is not applied properly, the microprocessor/ heatsink assembly will not work properly, and you risk damaging the system board.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

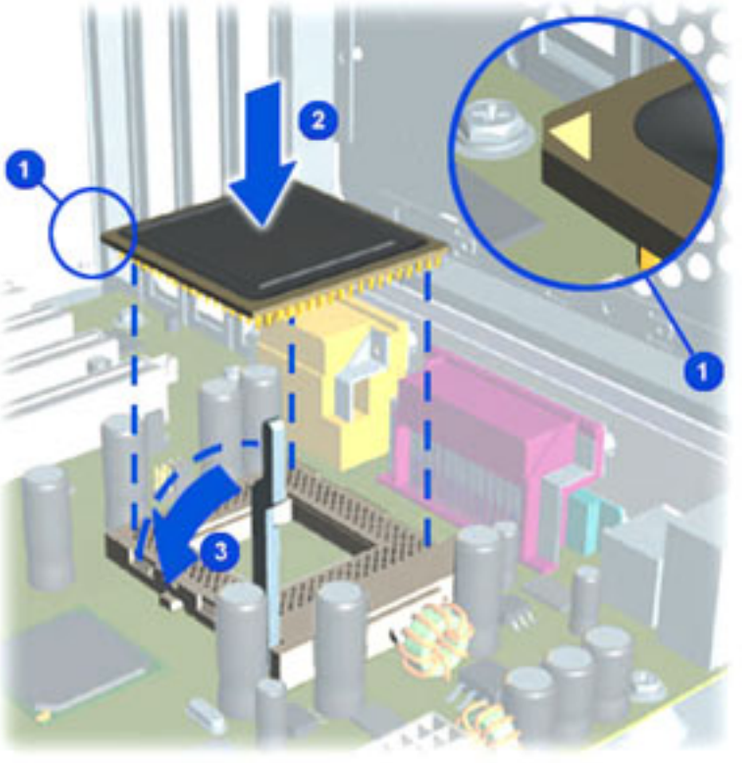
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly, Continued



Replacement

7. Align the microprocessor properly 1.
8. Place the microprocessor into the microprocessor interface socket 2 on the system board. Close the lever 3 to lock the microprocessor in place.

Next Step

NOTE	When the microprocessor is properly aligned, it will drop into place. No force will be needed.

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

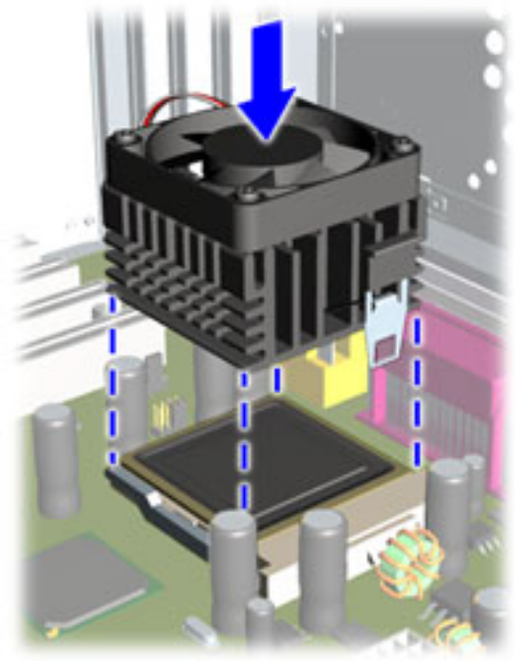
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly, Continued



Replacement

9. Place the heatsink assembly directly on top of the microprocessor.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

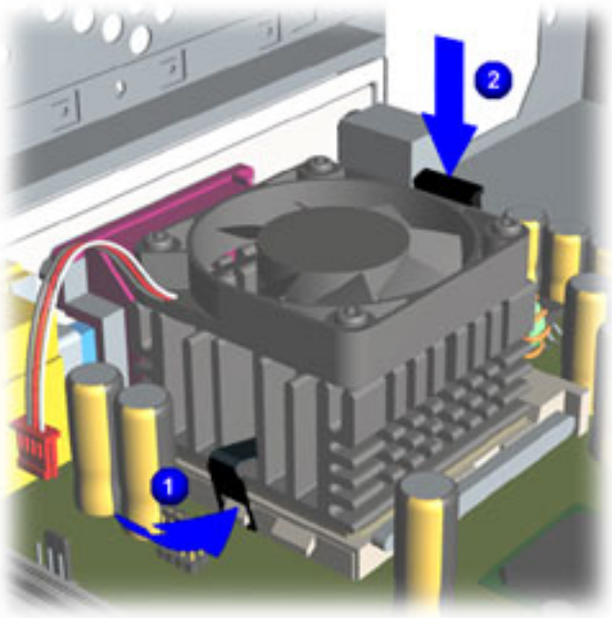
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly, Continued



Replacement

8. Hook the microprocessor clip 1 and 2 on the side of the heatsink assembly to the center tab on the microprocessor interface socket on the system board.

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

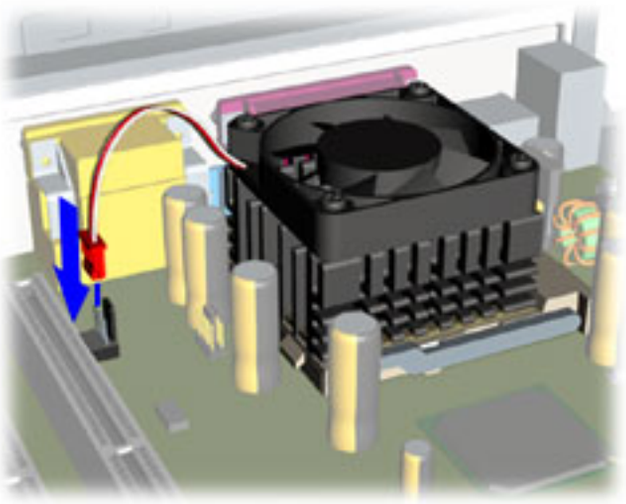
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Replacing the Microprocessor/Heatsink Assembly, Continued



Replacement

10. Reconnect the heatsink fan power cable to the system board.

Return to System Board Components Index Page

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

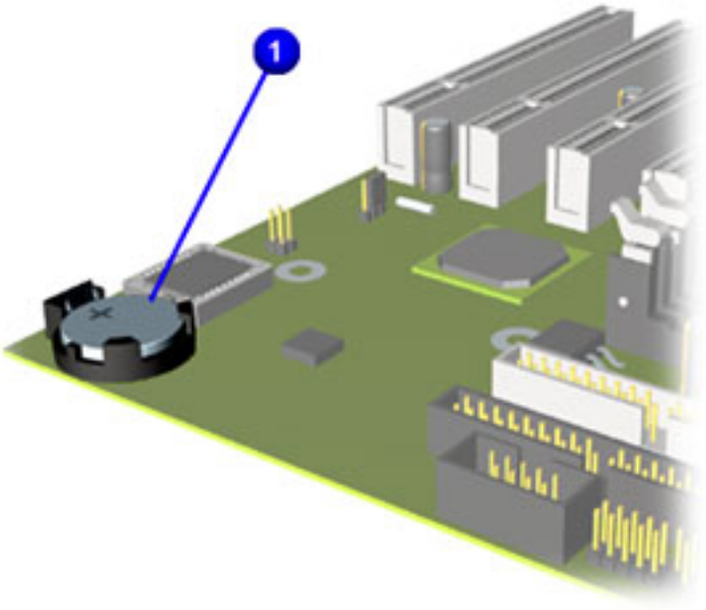
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the RTC Battery



Removal

1. Perform the preparation procedures.
2. Remove the side access panel.
3. Locate the RTC battery. 1

Next Step

ELECTROSTATIC DISCHARGE

SERVICE CONSIDERATIONS

PREPARATION FOR DISASSEMBLY

SERIAL NUMBER

SIDE ACCESS PANEL

EXPANSION CARD (Modem or Network Card)

MEMORY MODULE

HARD DRIVE

DISK DRIVE

REMOVING THE TOP DOOR

REMOVING THE CD STORAGE DOOR (Lower Front Panel - Open the CD Storage Door)

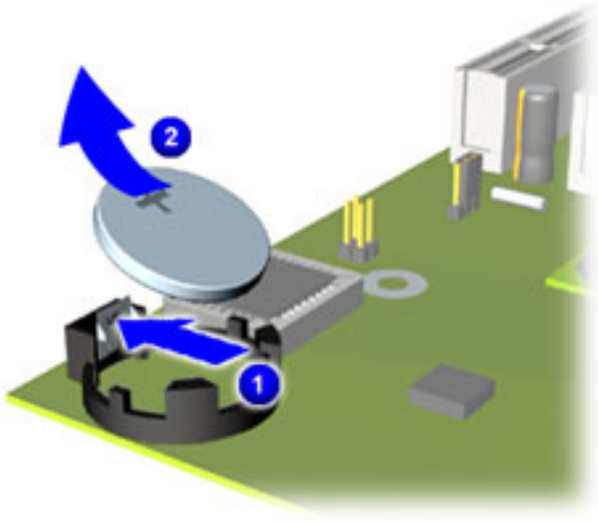
OPTICAL AND MASS STORAGE DEVICES (CD, CD-RW and/or DVD Drive, Hard Drive, Disk Drive)

POWER SUPPLY ASSEMBLY

FRONT I/O BOARD

SYSTEM BOARD COMPONENTS (RTC Battery, Microprocessor/Heatsink Assembly)

Removing the RTC Battery, Continued



Removal

4. Pull out on the socket lever (1) and lift the RTC battery (2) out of the socket.

Replacement

To replace the RTC battery, reverse these procedures.

Return to the System Board Components—Index Page

WARNING The clock/CMOS lithium battery may explode if mistreated. Do not abuse. Use only replacement batteries supplied by Compaq Computer Corporation.

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

Models: 5BW420, 5BW430, 5BW431, 5BW432, 5BW433, 5BW440, 5BW451, 5BW460, 5BW462, 5BW470, 5BW471, 5BW472, 5BW473, 5BW474, 5BW480, 5BW481, 5000LA, 5001LA, 5003LAS, 5002LB, 5004LA, 5006US, 5009SR, 5008SR, 5008US, 5010US, 5009CL, 5012US

PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

JUMPER AND SWITCH INFORMATION - INDEX PAGE

System Board Connectors

Hard Drives

CD and DVD Drive/CD-RW Drive

System Board Connectors

Internal Connectors	
Function	**Description**
DIMM Sockets	168 Pin DIMM
PCI Slots	32 Bit PCI Connector
Clear CMOS	3 Pin Header
DIMM Sockets	168 Pin DIMM
PCI Slots	32 Bit PCI Connector
Clear CMOS	3 Pin Header
Sleep Button & LEDs	5 pin 2mm Connector
Battery Socket	2 Pin Socket
IDE Drives	40 Pin Headers, Key 20
Diskette Drive	34 Pin Header
Left & Right Internal Speaker	2 Pin Header
2nd Fan	3 Pin Header, key side
+3.3V Power	6 Pin Header
Power Supply	12 Pin ATPWR Header

External Connectors	
Function	**Description**
Keyboard	Miniature 6 Pin
Mouse	Miniature 6 Pin
Parallel	25 Pin DSUB
Video	15 Pin VGA
Microphone In	Mini Stereo
Line In	Mini Stereo
Line Out	Mini Stereo
4 USB	2 front and 2 in back
Game port	Joystick
2 PS/2	Keyboard and mouse

SYSTEM BOARD

HARD DRIVES

CD and DVD DRIVE/ CD-RW DRIVE

Hard Drives

Compaq Computer Corporation uses IDE hard disk drives that conform to two different device I/O implementations. These are Conner mode and ATA-compatible mode. These two modes are incompatible with one another.

IMPORTANT	Jumper settings are shown on top of the hard drives.

CD and DVD Drive/CD-RW Drive

CD and DVD Drive	
Optical Device Type	CD
Optical Device Speed	X
Optical Device Transfer Rate	2500 - 6000KB/s
Interface	ATAPI
Transport Type	Tray Load

CD-RW Drive	
Optical Device Type	CD-RW
Device Recording Speed	4X Max
Device ReWrite Speed	2X Max
Device CD Read Speed	24X Max
Storage Capacity: Data	650 MB
Storage Capacity: Music	74 Minutes
Interface	EIDE/ATAPI
Transport Type	Tray Load

Maintenance and Service Guide

Compaq Presario Internet PC 5000 Series Computers

Models: 5BW420, 5BW430, 5BW431, 5BW432, 5BW433, 5BW440, 5BW451, 5BW460, 5BW462, 5BW470, 5BW471, 5BW472, 5BW473, 5BW474, 5BW480, 5BW481, 5000LA, 5001LA, 5003LAS, 5002LB, 5004LA, 5006US, 5009SR, 5008SR, 5008US, 5010US, 5009CL, 5012US

PRODUCT DESCRIPTION

TROUBLESHOOTING

ILLUSTRATED PARTS CATALOG

>REMOVAL AND REPLACEMENT PROCEDURES

JUMPER AND SWITCH INFORMATION

SPECIFICATIONS

SPECIFICATIONS - INDEX PAGE

This section provides physical, environmental, and performance specifications for Compaq Presario Internet PC 7000 Series Computers.

CD-ROM and DVD Drive/CD-RW Drive

Disk Drive

Zip Drive

Fax/Modem

Mouse

Power Supply

System Board

CD or DVD DRIVE/ CD-RW DRIVE

DISK DRIVE

ZIP DRIVE

FAX/MODEM

MOUSE

POWER SUPPLY ASSEMBLY

SYSTEM BOARD

CD or DVD Drive /CD-RW Drive

Please select a drive to view specifications:

CD Drive
DVD Drive
CD-RW Drive

CD Drive

Dimensions	U.S.	Metric
Width	5.75 in	15.01 cm (maximum)
Height	1.67 in	4.29 cm
Depth	8.23 in	20.80 cm
Weight	2.65 lb	1.200 kg
Modes Supported		
CD-ROM	Mode 1 and Mode 2	
CD-DA	Audio	
CD-XA	Mode 2, Form 1 and 2	
Photo CD	Multiple Session	
Video-CDI	Multiple Session	
CD-Plus/CD-Extra/CD Enhanced	Multiple Session	
CD-RW	Multiple Session	
Block Size		
CD-ROM Mode 1 and Mode 2 Form 1 (XA)	2048 bytes	
CD-ROM Mode 2	2336 bytes	
CD-DA	2324 bytes	
CD-XA	2324 bytes	
Center Hole	1.5 mm diameter	
Diameter	120 mm/80mm	
Thickness	1.2mm	
Track Pitch	1.6mm	
Laser		
Divergence Angle	53.5 degrees +/- 1.5 degrees	
Output Power	0.14 mW (@ objective lens)	
Type	Semiconductor laser GaAlAs	
Wave Length	780nm +/- 25 nm	
Access Time		
Random	< 95 ms (typical)	
Full Stroke	< 190 ms (typical)	
Audio Output Level		
Line Out	0.7 Vrms ±20%	
Headphone	0.6 Vrms ±20%	
Cache Buffer	256 KB	
Data Transfer Rate		
	Mode 1	**Mode 2**
Sustained	4800 KB/sec	5475 KB/sec
	KB.sec (32x)	KB/sec (32x)
Burst	MB/sec	MB/sec
Startup Time	< 5 sec	
Stop Time	< 5 sec	

Return to top

DVD Drive

Dimensions	U.S.	Metric
Width	5.75 in	15.01 cm (maximum)
Height	1.67 in	4.29 cm
Depth	8.23 in	20.80 cm
Weight	1.80 lb	0.90 kg
Modes Supported	Mode 1 and Mode 2	
Block Size	2048 bytes	
Center Hole	15 mm diameter	
Disc Diameter	12 cm, 8 cm	
Thickness	1.2 mm	
Track Pitch	10.74 µm	
Access Time		
Random	<180 ms typical	
Full Stroke	< 300 ms	
Audio Output Level		
Line Out	1.0 V (RMS) at 47 kW	
Headphone	0.7 V (RMS) at 32 W	
Cache Buffer	512 Kb	
Data Transfer Rate		
Sustained	2705-8115 KB/sec	
Burst		
Startup Time	< 10 sec	
Stop Time	< 2 sec	

Return to top

CD-RW Drive

Dimensions	U.S.	Metric
Width	5.75 in	15.01 cm (maximum)
Height	1.67 in	4.29 cm
Depth	8.23 in	20.80 cm
Weight	2.65 lb	1.200 kg
Modes Supported		
CD-ROM	Mode 1 and Mode 2	
CD-DA	Audio	
CD-XA	Mode 2, Form 1 and 2	
Photo CD	Multiple Session	
Video-CDI	Multiple Session	
CD-Plus/CD-Extra/CD	Multiple Session	
Enhanced		
CD-RW	Multiple Session	
Block Size		
CD-ROM	2048 bytes	
Mode 1 and Mode 2 Form 1 (XA)		
CD-ROM Mode 2	2336 bytes	
CD-DA	2324 bytes	
CD-XA	2324 bytes	
Center Hole	1.5 mm diameter	
Diameter	120 mm/80mm	
Thickness	1.2 mm	
Track Pitch	1.6mm	
Access Time		
Random	< 95 ms	
Full Stroke	< 190 ms	
Audio Output Level		
Line Out	0.7 Vrms ±20%	
Headphone	0.6 Vrms ±20%	
Cache Buffer	256 KB	
Data Transfer Rate		
	Mode 1	**Mode 2**
Sustained	4800 KB/sec	5475 KB/sec
	KB/sec (32x)	KB/sec (32x)
Burst	MB/sec	MB/sec
Startup Time	< 5 sec	
Stop Time	< 5 sec	

Return to top

CD or DVD DRIVE/ CD-RW DRIVE

DISK DRIVE

ZIP DRIVE

FAX/MODEM

MOUSE

POWER SUPPLY ASSEMBLY

SYSTEM BOARD

Disk Drive

Diskette Drive	
Diskette	
Size (in)	3.5 (8.89 cm)
High Density	1.44
Light	Green
Height	One-third
Bytes per Sector	512
Sectors per Track	
High Density	18
Tracks per Side	
High Density	80
Low Density	80
Rotational Speed	300 RPM
Read/Write Heads	2
Average Seek Time (ms)	
Track-to-Track	3
Setting Time	15 (Max)

CD or DVD DRIVE/ CD-RW DRIVE

DISK DRIVE

ZIP DRIVE

FAX/MODEM

MOUSE

POWER SUPPLY ASSEMBLY

SYSTEM BOARD

Zip Drive

Zip Drive	
Total formatted capacity (bytes)	100,663,296
Sector size (bytes)	512
Total number of sectors	196,608
Number of reassignable spare sectors	252
Seek times (including settling), ms: Average Track-to-track Maximum	 29 5 55
Average latency, ms	10
Motor speed, rpm	2941±5%
Motor start time, ms	3000
Track density, tpi	2118
Track width, µm	12
Transfer rate, kb/s: From disk Buffer (maximum)	 790-1400 3300

CD or DVD DRIVE/ CD-RW DRIVE

DISK DRIVE

ZIP DRIVE

FAX/MODEM

MOUSE

POWER SUPPLY ASSEMBLY

SYSTEM BOARD

Fax/Modem

Fax/Modem	
General Description	
Support	Supports 56K flex and/or ITU-T V.90. 14400bps send and receive fax modem with automatic fallback to 12000, 9600, 7200, 4800, and 2400bps.
	Supports fax service Class 1 (EIA/TIA 578). Supports V.80 video ready modem. Built-in DTE interface with speed up to 115.2kbps or 57.6kbps, parallel 16550a UART-compatible interface. Power Management Registers to PCI Interface.
Data Mode	K56flex and/or ITU-T V.90 56kbits/s for highest Internet connection rates. Ultrahigh compression throughput due to parallel access directly to the host PC. ITU-T V.34 extended rates 33600bps to 2400bps. V.32terbo, V.32bis and fallbacks. TIA/EIA 602 standard for AT command set. V.42 error correction (LAM and MNP). V.42bis and MNP Class 5 data compression.
Fax Mode	Fax modem send and receive rates up to 14400bps. * V.17, V.29, V.27ter, and V.21 channel 2 * TIA/EIA 578 Class 1 FAX
Error Correction	ITU-T recommended V.42 error correction. V.42 error correction (LAM and MNP).

CD or DVD DRIVE/ CD-RW DRIVE

DISK DRIVE

ZIP DRIVE

FAX/MODEM

MOUSE

POWER SUPPLY ASSEMBLY

SYSTEM BOARD

Mouse

USB Mouse		
Dimensions	**U. S.**	**Metric**
Height Length Width		
Weight w/cable	4.59 oz	130 g
Base Resolution	400 dpi	15.8 dpmm
Tracking Speed (maximum)	10 in/sec	25 cm/sec
Temperature Operating Non-Operating	 0° C to + 40° C -20° C to + 60° C	 32° F to 104° F 4° F to 140° F
Lifetime Mechanical Switch	 Exceeds 300 miles Exceeds 1 million operations	 Exceeds 483 km Exceeds 1 million operations
Relative Humidity	10% to 90%, noncondensing at ambient.	

CD or DVD DRIVE/ CD-RW DRIVE

DISK DRIVE

ZIP DRIVE

FAX/MODEM

MOUSE

POWER SUPPLY ASSEMBLY

SYSTEM BOARD

Power Supply Assembly

Power Supply Assembly	
Input Specifications	**U.S.**
Nominal Line Voltage	115 to 230 VAC
Range Input Line	90 to 264 VAC
Frequency Range	47 to 63 Hz AC
Input Current	115V 3.00 AMPS
Input Current	4.5 RMS at Max Load
Output Power	145 Watts
Inrush Current	80 A at 132 VAC (cold start)
Holdup Time	16 ms from zero
Environment	Temperature Range
Operating	10 to +50 C
Non-Operating	-40 to +66 C
Humidity	
Operating	20% to 90% RH
Storage	5% to 95% RH

System Board

- General System Specifications
- Environmental Requirements
- System Interrupts
- System I/O
- System Memory
- System DMA

General System Specifications

Dimensions	U.S.	Metric/ International
Height		
Width		
Length		
Weight		
Shipping Weight	36.6 lbs	11.5 kg
Input Requirements		
Nominal Line Voltage	115 VAC	230 VAC
Range Line Voltage	90-132 VAC	180-264 VAC
AC Frequency	47 or 63 Hz	50 or 60 Hz
Input Current	4.5 RMS at Max Load	4.5 RMS @ Max Load
Power (watts)		
Steady State	145	145

Return to top

Environmental Requirements

Temperature		
Operating	50° to 95° F	10° to 35° C
Shipping	-4° to 140° F	-20° to 60° C
Humidity (noncondensing)		
Operating	8% to 90%	8% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum Altitude (unpressurized)		
Operating	10,000 ft	3048 m
Nonoperating	30,000 ft	9144 m

Return to top

System Interrupts

Hardware IRQ	System Function
IRQ 0	System timer
IRQ 1	Standard 101/102-Key or Microsoft Natural Keyboard
IRQ 2	Programmable interrupt controller
IRQ 3	ACPI IRQ Holder for PCI IRQ Steering
IRQ 3	Intel(R) 810e Chipset Graphics Driver (DC133 FSB133) 4.11.01.1321
IRQ 4	Communications Port (COM1)
IRQ 5	ACPI IRQ Holder for PCI IRQ Steering
IRQ 5	Intel 82801AA SMBus Controller
IRQ 6	Standard Floppy Disk Controller
IRQ 7	ECP Printer Port (LPT1)
IRQ 8	System CMOS/real time clock
IRQ 9	SCI IRQ used by ACPI bus
IRQ 10	MPU-401 Compatible
IRQ 11	ACPI IRQ Holder for PCI IRQ Steering
IRQ 11	Intel 82801AA USB Universal Host Controller
IRQ 12	PS/2 Compatible Mouse Port
IRQ 13	Numeric data processor
IRQ 14	Primary IDE controller (dual fifo)
IRQ 14	Intel 82801AA Bus Master IDE Controller
IRQ 15	Secondary IDE controller (dual fifo)
IRQ 15	Intel 82801AA Bus Master IDE Controller

Return to top

System I/O

I/O Address (Hex)	System Function (Shipping Configuration)
x0000 - x000F	Direct memory access controller
X0220 - x022F	Not used
x0010 - x001F	Motherboard resources
x0020 - x003F	Programmable interrupt controller
x0040 - x0043	System timer
x004E - x004F	Motherboard resources
x0050 - x0052	Motherboard resources
x0060 - x0060	Motherboard resources
x0061 - x0061	System speaker
x0064 - x0064	Motherboard resources
x0070 - x0071	System CMOS/real time clock
x0072 - x0077	Motherboard resources
x0080 - x008F	Direct memory access controller
x0090 - x009F	Motherboard resources
x00A0 - x00A1	Programmable interrupt controller
x00A0 - x00BF	APM
x00C0 - x00DF	Direct memory access controller
x00E2 - x00E3	DDC2 Registers
x00E4 - x00E5	Master I2C Interface
x00EA - x00EB	Ultra I/O
x00EC - x00EF	Modem configuration
x00F0 - x00FF	Numeric data processor
x0102	Video Controller: POS 102 register
x0170 - x0177	Intel(r) 82801AA Ultra ATA Controller
x0170 - x0177	Secondary IDE controller (dual fifo)
x01F0 - x01F7	Intel(r) 82801AA Ultra ATA Controller
x01F0 - x01F7	Primary IDE controller (dual fifo)
X0201	Gameport Joystick
X0260 - x0263	Reserved-Modem use during POST
X0278 - x027F	Reserved-Parallel Port:
x02E8 - x02EF	Reserved-Serial Port (COM4)
x02F8 - x02FF	FAX/Modem (COM2)??
x0300 - x0301	MPU-401 Compatible
x0370 - x0377	Reserved-Floppy Drive Controller 2
x0376 - x0376	Intel(r) 82801AA Ultra ATA Controller
x0376 - x0376	Secondary IDE controller (dual fifo)
x0378 - x037F	Parallel Port
x03B0 - x03BB	Intel(R) 810e Chipset Graphics Driver (DC133 FSB133) 4.11.01.1321
x03C0 - x03DF	Intel(R) 810e Chipset Graphics Driver (DC133 FSB133) 4.11.01.1321
x03F0 - x03F5	Standard Floppy Disk Controller
x03F6 - x03F6	Intel(r) 82801AA Ultra ATA Controller
x03F6 - x03F6	Primary IDE controller (dual fifo)
x03F8 - x03FF	Communications Port (COM1)
x04D0 - x04D1	Motherboard resources
x0570 - x0776	Alias and more alias
x0778 - x077A	ECP Printer Port (LPT1)
x077B - x0BF6	
x0CF8 - x0CFF	PCI bus
x0D70 - x0D77	Alias and more alias
x1000 - x1FFF	Intel 82801AA PCI Bridge
x2020 - x2027	Primary IDE controller (dual fifo)
x2020 - x202F	Intel 82801AA Bus Master IDE Controller
x2028 - x202F	Secondary IDE controller (dual fifo)
xEE00 - xEE7F	Motherboard resources
xEE80 - xEEBF	Motherboard resources
xEEC0 - xEEDF	Intel 82801AA USB Universal Host Controller
xEEE0 - xEEEF	Intel 82801AA SMBus Controller
x2570 - x46E7	Alias and more alias
x46E8	Video Controller: Adapter Sleep
x46E9 - xEDFF	Alias and more alias
xEE00 - xEE7F	Motherboard resources
xEE80 - xEEBF	Motherboard resources

Return to top

System Memory

Memory Address	System Function
x00000000 - x0009FFFF	System board extension for ACPI BIOS
x000A0000 - x000AFFFF	Intel(R) 810e Chipset Graphics Driver
x000B0000 - x000BFFFF	Intel(R) 810e Chipset Graphics Driver
x000E0000 - x000FFFFF	System board extension for ACPI BIOS
x00100000 - x03FFFFFF	System board extension for ACPI BIOS
x40000000 - x4007FFFF	Intel(R) 810e Chipset Graphics Driver
x44000000 - x47FFFFFF	Intel(R) 810e Chipset Graphics Driver
xFFB80000 - xFFBFFFFF	System board extension for ACPI BIOS
xFFF80000 - xFFFFFFFF	System board extension for ACPI BIOS

Return to top

System DMA

Hardware	System Function (Default)
DMA 2	Standard Floppy Disk Controller
DMA 3	ECP Printer Port (LPT1)
DMA 4	Direct Memory Access Controller

Return to top